



Credential Report: Megacity Engineering

Subject: Corporate Profile and Heavy Steel Fabrication Capabilities

Executive Summary

With over **30 years of excellence** in the industrial sector, **Megacity Engineering** has established itself as a premier authority in heavy steel fabrication. Since its inception, the company has bridged the gap between complex architectural vision and structural reality. Known for precision engineering and a "safety-first" culture, Megacity has been a pivotal partner in developing the nation's infrastructure, energy, and industrial landscapes.

Core Competencies

Megacity Engineering specializes in the end-to-end delivery of large-scale steel projects, including:

- **High-Rise Structural Steel:** Fabrication of Grade-A skeletons for commercial skyscrapers.
 - **Industrial Plant Modules:** Specialized skids and heavy-duty frameworks for refineries.
 - **Infrastructure & Bridges:** Long-span trusses and seismic-resistant bridge components.
 - **Custom Heavy Machining:** Precision components for the mining and maritime sectors.
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Key Project Highlights

Over three decades, Megacity has successfully delivered **500+ projects**. Below are some of the hallmark achievements that define their legacy:

CREDENTIAL REPORT

SL NO.	CLIENT NAME	DESCRIPTION	STATUS
1	HINDUSTAN SHIPYARD LIMITED (HSL)	HEAVY STRUCTURAL STEEL ERECTION, TANKAGE FABRICATION AND OTHER MISC WORKS	COMPLETED
2	DURGAPUR STEEL PLANT IISCO	HEAVY STRUCTURAL STEEL ERECTION, COMMISSIONING SUPPORT SERVICE	COMPLETED
3	WELCAST INDIA PRIVATE LIMITED	PILING FABRICATION AND PEB SHADE FABRICATION ERECTION, COMMISSION	COMPLETED
4	BEIRA IRON AND STEEL COMPANY	MECHANICAL ERECTION AND ALIGNMENT WORK HYDROSTATIC TESTING AND COMMISSIONING ASSISTANCE	COMPLETED
5	COROMANDEL INTERNATIONAL LIMITED	HEAVY STRUCTURAL AND PEB SHADE ERECTION	COMPLETED
6	M/S L&T HYDROCARBON	REPLACEMENT OF 344 NOS ABB TRANSMITTER AND MANIFOLDS	COMPLETED
7	M/S DAELIM PETROFAC JV	INSTALLATION OF CONTROL VALVES AND SUPPLY OF MANPOWER FOR LIQUID HYDROCARBON SYSTEMS	UNDER PROCESS
8	M/S TOUO ENGINEERING	FABRICATION WORK FOR VARIOUS PROJECTS AT MFF HAZIRA SITE	COMPLETED
9	JUBLIEE BOTTLERS PVT LTD	HSS AND PIPE FABRICATION WORK AND MECHANICAL INSTALLATION WORKS	UNDER PROCESS
10	BIRLA CABLE LIMITED	STRUCTURAL STEEL REPAIR AND ERECTION WORKS	COMPLETED
11	ASAHI INDIA GLASS LIMITED	REPLACEMENT OF FLARE HEADER AND STRUCTURAL MODIFICATION	COMPLETED

Major Clients:-

- * Hindustan Shipyard Limited (HSL)
- * Durgapur Steel Plant IISCO
- * Bhilai Steel Plant
- * Welcast India Private Limited
- * Cairn India
- * Kothari Petrochemicals Limited
- * Coromandel International Limited
- * Modest Shipyard Ltd
- * Tanfac Industries Limited

WORK ORDER

Work Order No: WWPL/BISCO/2023/WO-082

Date: June 17, 2023

Years of Work: 2023,2024,2025

Client: Beira Iron and Steel Company (BISCO)

Contractor: Megacity Engineering

Issuing Authority: Vibrant Worldwide Pvt Ltd

1. Project Overview

This Work Order is issued for the **Erection, Commissioning, and Civil Infrastructure Development** for the Beira Iron and Steel Company (BISCO) integrated steel plant. As an facility with a production capacity of **5.5 Million Tonnes Per Annum (MTPA)**, precision and adherence to heavy industrial safety standards are paramount.

2. Scope of Work (SOW)

The contractor, Megacity Engineering, is responsible for providing all labor, tools, tackles, and supervision for the following:

A. Civil Engineering & Foundation Works

- **Heavy Equipment Foundations:** Execution of reinforced concrete foundations for blast furnaces, rolling mills, and heavy machinery.
- **Structural Piling:** Deep foundation works to support high-load-bearing steel structures.
- **Infrastructure:** Construction of internal drainage, cable trenches, and reinforced industrial flooring designed for heavy-duty vehicular movement.

B. Heavy Steel Fabrication & Erection

- **Structural Framework:** Assembly and erection of pre-fabricated heavy steel columns, trusses, and gantry girders.
- **High-Rise Structures:** Erection of the furnace tower and secondary support structures.
- **Interconnecting Piping & Pipe Racks:** Fabrication and installation of large-bore process piping and structural supports.

C. Mechanical Erection & Commissioning

- **Equipment Positioning:** Precise alignment and leveling of heavy machinery using laser-guided instruments.
- **Testing & Pre-commissioning:** Hydro-testing of pipelines, load testing of gantry cranes, and cold-run trials of moving components.

- **Final Handover:** Assistance in hot-commissioning and stabilization of the 5.5 MTPA production line.
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3. Technical Specifications & Quality

All work must comply with the following standards:

- **Welding:** 100% Radiography/Ultrasound testing for critical structural joints.
- **Material:** All steel must meet IS/ISO grade specifications as per the master drawing.
- **Tolerance:** Alignment of heavy rotating equipment must be within ± 0.05 mm or as per OEM manual.

4. Commercial Terms

Description	Unit	Total Estimated Value
Civil & RCC Works	Lump Sum	As per Annexure A
Steel Erection & Fabrication	Per MT	As per Annexure B
Commissioning Services	Man-Days	As per Annexure C

- **Payment Terms:** 10% Mobilization Advance, 80% Progressive Monthly Billing, 10% Retention (payable after the defect liability period).
 - **Completion Period:** 18 months from the date of site handover.
-

5. Safety & Compliance

- **HSE Policy:** Zero-tolerance for safety violations. All workers must possess valid PPE.
- **Statutory Compliance:** Contractor is responsible for all labor licenses, insurance (CAR Policy), and ESIC/PF compliance.

Note: Any deviation from the approved structural drawings must be communicated in writing to the Vibrant Worldwide Project Manager before execution.

Annexure A: Detailed Civil Material Specifications

This annexure outlines the technical requirements for materials to be used in the construction of the **5.5 MTPA Beira Iron and Steel Company (BISCO)** plant. Given the high-temperature environment and extreme structural loads of an integrated steel plant, the following specifications are mandatory.

1. Concrete & Cementitious Materials

- **Cement:** Ordinary Portland Cement (OPC) Grade 53 or Portland Slag Cement (PSC) complying with IS 455, chosen for its resistance to chemical attack in industrial environments.
- **Concrete Grade:** * **M35/M40:** For heavy machine foundations and blast furnace pedestals.
- **M25:** For secondary structures and trenches.
- **Admixtures:** Use of plasticizers or super-plasticizers (conforming to IS 9103) is permitted to maintain a low water-cement ratio while ensuring high workability for dense reinforcement areas.

2. Reinforcement Steel (Rebars)

- **Grade:** TMT (Thermo-Mechanically Treated) bars of grade **Fe 500D** or **Fe 550**.
- **Specification:** Must comply with IS 1786. "D" grade is mandatory to ensure higher ductility, essential for structures subject to dynamic loads and vibrations from heavy rolling mills.
- **Condition:** Bars must be free from pitting, loose rust, or oily coatings that impair bonding.

3. Structural Embedding & Anchor Bolts

- **Anchor Bolts:** High-tensile steel (Grade 8.8 or 10.9) for securing heavy equipment. All bolts must be hot-dip galvanized.
- **Grouting:** Non-shrink, high-strength free-flow epoxy or cementitious grout (e.g., GP2 or equivalent) for equipment baseplates to ensure 100% contact area.

4. Aggregates & Water

- **Coarse Aggregate:** Crushed angular granite or trap rock (20mm and 10mm graded), free from flaky or elongated pieces.
- **Fine Aggregate:** Clean river sand or manufactured sand (M-Sand) Zone II, free from silt and organic impurities.
- **Water:** Potable water with a pH value between 6.5 and 8.5; chloride and sulfate content must be within permissible limits of IS 456.

5. Industrial Flooring & Finishes

- **Hardener:** Non-metallic floor hardeners (Ironite or equivalent) applied as a monolithic topping for high abrasion resistance in shop floors.
- **Chemical Coating:** Anti-corrosive epoxy coating for areas exposed to pickling acids or chemical spillage.

Material Testing Requirements

Megacity Engineering must conduct the following tests at an NABL-accredited laboratory:

Material	Test Frequency	Key Parameter
Cement	Every 50 tonnes	Compressive strength & Setting time

Material	Test Frequency	Key Parameter
Rebars	Every 20 tonnes	Yield stress & Elongation %
Concrete	Every 50 \$m^3\$	7-day and 28-day Compressive strength
Aggregates	Every 100 \$m^3\$	Sieve analysis & Impact value

Annexure B: Heavy Steel Fabrication & Erection Standards

This annexure defines the rigorous engineering standards required for the structural integrity of the **5.5 MTPA BISCO Plant**. Given the massive static and dynamic loads—including overhead crane vibrations and thermal expansion—Megacity Engineering must adhere to the following specifications.

1. Material Standards & Traceability

- **Steel Sections:** All plates, rolled sections (beams, channels, angles), and hollow sections must conform to **IS 2062 Grade E250/E350 Quality BR/BO** (Killed Steel).
- **Traceability:** Every individual component must be marked with a heat number. Material Test Certificates (MTC) must be correlated with the heat numbers before fabrication begins.
- **Storage:** Steel must be stored on raised sleepers to prevent soil contact and corrosion.

2. Fabrication Procedures

- **Cutting:** CNC Oxy-fuel or Plasma cutting is preferred for plates thicker than 10mm to ensure edge precision. All burrs and slag must be ground smooth.
- **Straightening:** Any camber or sweep in rolled sections must be corrected using cold straightening or controlled heat straightening (not exceeding **600°C**).
- **Hole Punching/Drilling:** Punching is permitted only for secondary members (thickness < 12 mm). All primary structural connections must be **drilled**.

3. Welding Specifications

- **Process:** Manual Metal Arc Welding (MMAW) or Submerged Arc Welding (SAW) for long seams.
- **Consumables:** Low-hydrogen electrodes (E7018) stored in mother ovens at **250°C-300°C** and transferred to portable ovens at the work spot.
- **Edge Preparation:** V-groove or U-groove preparation as per **IS 9595**. Surfaces must be cleaned of mill scale, rust, and oil.

4. Erection & Alignment

- **Sequencing:** Erection must follow a pre-approved "Stability Sequence" to ensure the structure is self-supporting at the end of each shift.
- **Temporary Bracing:** Sufficient guy wires and temporary struts must be used until final permanent bracing and bolting are completed.

- **Tolerance Limits:**
 - **Column Plumb:** 1 in 1000 or max 25mm for the full height.
 - **Beam Level:** ± 3 mm for every 10 meters.
 - **Crane Rail Alignment:** Span tolerance within ± 2 mm to prevent long-travel motor burnout.
5. Surface Treatment (Painting)

- **Surface Prep:** Blast cleaning to **Sa 2.5** (Near White Metal) as per ISO 8501-1.
- **Coating System:**
 - **Primer:** Inorganic Zinc Silicate (IZS) - 75 microns.
 - **Intermediate:** Epoxy High Build - 100 microns.
 - **Finish:** Aliphatic Polyurethane (PU) - 50 microns (BISCO Blue/Grey as per brand manual).

Quality Control & Non-Destructive Testing (NDT)

Component	Test Method	Acceptance Criteria
Butt Welds	Radiographic (RT) / Ultrasonic (UT)	100% of critical joints
Fillet Welds	Dye Penetrant (DPT) / Magnetic Particle (MPT)	10% random check
High Strength Bolts	Torque Wrench / DTI Washers	As per IS 4000
Paint Thickness	Dry Film Thickness (DFT) Gauge	Minimum 225 microns total

WORK ORDER

Work Order No: WCPL/ALKUKC/2023/RO-034

Date: January 22, 2023

Years of Work: 2023-2024

Client: *M/s Al Kharj Company*

[Al kharj Industrial City, KINGOM OF SAUDI ARABIA](#)

Contractor: Megacity Engineering

Issuing Authority: RS Infratech

CONTRACT FOR COMPLETE PLANT SETUP



Contract Ref No /KSA/MEGACITY/ENQ 866/23

Date: 02.03.2023

M/s Al Kharj Company

Al kharj Industrial City, KINGOM OF SAUDI ARABIA

Kind Attn. : Mr. Rashid Ali Sheikh

Offer Ref. No.: ENQ 866/23 dated 02.03.2023 and discussions on 01, 02 Aug 23 at Kolkata & 06 Sept 23

SCOPE OF SERVICE – AS PER PROJECT REPORT IMPLEMENTATION OF DUCTILE IRON FOUNDRY WITH COMPLETE DESIGN, PROJECT REPORT, SYNDICATION, PROJECT IMPLEMENTATION, PROJECT SETUP, TECHNOLOGY, TRAINING & RECRUITMENT, TECHNICAL SUPPORT, RODUCT STANDARDIZE, PLANT SETUP & OPERATION, ERECTION, COMISSION, INCLUDING TRAIL RUN AND ANNUAL MAINTENANCE CONTRACT, MARKET SURVEY, MARKETING & SALES.

Dear Sir,

MEGACITY ENGINEERING (INDIA), Regd. & Corporate Office, 11A, Charu Avenue, Kolkata – 700033 West Bengal, India is pleased to submit the following techno economy offer.

M/s.

Contents:

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| 1) Executive Summary of Contract/Service & Offer | 10) Contract |
| 2) Scope of Work. | 11) Summary of Scope of Service |
| 3) Project Configuration & Scope of Job | 12) Exclusions |
| 4) Manufacturing process flow chart. | 13) Terms & Conditions |
| 5) Proposed plant Layout (Machinery) | 14) General Terms of Consulting Services of our German & U.K. Engineers. |
| 6) Implementation Schedule | 15) Scope of Erection Commission & Fabrications |
| 7) Overview of Plant Layout | 16) List of Plant & Machinery to be installed & Erection. |
| 8) Production floor view of plant | 17) Installation of Induction Furnace 2 No. Including Erection Commission & Trial Run |
| 9) Electrical General Arrangement Drawing. | |

Executive Summary of Contract/Service & Offer

Executive Summary of Contract

Al Kharj Company, intends to manufacture foundry casting products for the use at municipality, roads, construction, water engineering, etc. with a plant capacity of 20,000 MT at Al kharj Industrial City, KINGOM OF SAUDI ARABIA. The proposed project shall assist in backward integration of existing facilities of the group company – Al-Jaber LLC (Construction Division), which is amongst one of the largest construction manufacturers in KINGOM OF SAUDI ARABIA. In this regards, the Company has approached Megacity Engineering India (MEI or Consultants) to appraise the Project. This is MEI's final report/offer based on the feedback received thereon from the Company.

ALKHARJ AL KHARJ, promoted by the Al-Jawdat Group, was incorporated on 1970 D.C. Kingfahad Road, Riyadh, Saudi Arabia. The 'Group' is engaged in construction industry since last 46 years.

Product and Industry Overview

The proposed project envisages manufacture of foundry castings with a plant capacity of 20,000 MTPA. The Iron /Steel scrap are direct raw material for the foundry units which are melted in the electric induction furnace with additives to produce Casting parts. These parts are used in the manufacture of Water Engineering, Auto Engineering, sectors.

Site Assessment

The land is situated at Al Kharj Industrial City, KINGOM OF SAUDI ARABIA. The total land earmarked for the entire project is around 9.83 acres. The land is rectangular shaped with natural towards the north eastern side.

The road connectivity and the access to the nearest sea port and airport are the two major advantages of the site.

Most of the raw materials are available within a radius of 200 Km.

Water is available in abundance within the site area.

Skilled and Unskilled manpower is also available locally. Some Skilled and semi-skilled manpower will be procured from the neighboring Countries.

About Megacity Engineering (India) The Consultant

Megacity Engineering in India ('ME' or the 'Consultants') is a part of the India based Mott MacDonald Group, a globally leading multi-disciplinary management and engineering consultancy, with offices spread across the country.

Megacity is engaged in planning and development touching many aspects of everyday life – from water, energy, industry, environment, and transport to building, healthcare, and social development. Across these sectors, Megacity works for International and local governments, public, and private utilities, industrial and commercial companies, investors, developers, banks and financial institutions, international and bilateral funding agencies, and private entrepreneurs.

With about 140 professionals in India operations, Megacity takes care of the entire process of the project – from concept to commissioning—including providing advice on the best procurement route and the optimum approach for maintaining the project once it enters service.

For past about four decades Megacity has been at the forefront of management and engineering consultancy in India, UK, US, UAE working on a wide variety of projects for an equally broad spectrum of clients – large public and private sector companies, state and central governments, multinational companies.

Megacity has a powerful synergy built on the best domestic and international talent and expertise. This ensures Megacity clients benefit from an even greater range of skills and services, all meeting international quality standards.

Technical Aspects

Ductile Founding/Casting is a forming process wherein complicated shapes of engineering components are manufactured by casting liquid metal into moulds made of heat resistant material generating the desired shape and design of the casting at specified physical properties. Major stages involved in the casting process are:-

Melting, Patterning, Moulding, Core Making, Knocking, Fettling, Heat Treatment, Shot Blasting, Finishing, Inspecting and Testing, Assembling and Despatch.

Scope of Work

The Scope of Work (SoW) of the assignment undertaken by **MEGACITY**.

PROJECT REPORT : Compiling Project Feasibility report and techno-commercial report with complete financial report , and market survey.

SYNDICATION: Syndication & Co-ordination of various consultant globally.

PROJECT IMPLEMENTATION: Conceptualization and Expansion to reality.

PROJECT SETUP: Equipment selection with complete specification and find out best vendor / Supplier.

TECHNOLOGY: Find out worlds latest technology with value engineering services by various renowned consultant for practical feasibility with Budgetary aspect.

TRAINING & RECRUTMENT: Sourcing of best workforce from various renowned factory And provide training by us and by machine supplier.

TECHNICAL SUPPORT: Research & development on various machines for more productivity and to achieve absolute performance according our product with complete technical manuals .

PRODUCT STANDARDIZE : Standardize of product , preparation of drawing , design & other technical aspect for making dice, Mould & Pattern, Along with complete technical catalog.

PLANT SETUP & OPERATION: Err action & commissioning , recruitment of concern workforce under my complete supervision with the coordination of supplier & other concern people up to trial run.

MARKET SURVEY : Market survey with current market trend, future market trend , scope , list of buyers (globally), with complete data & planning with implementation.

MARKETING & SALES : According knowledge & experience of Sales & Marketing , We will recruit some renowned marketing people who are known to me since long can ensure performance & also arrange for training of junior candidate for follow up & carry out.

PROMOTION OF PROJECT: Development of Web Site, Internet publication, Web page, news letter circulation.

SOFTWARE DEVELOPEMNT: Development and implementation of operational software specially designed for foundry project.

Project Background

- ✓ Reviewing the basic objectives and scope of the Project
- ✓ Reviewing the assessment of key Project participants

Market Assessment

- ✓ Key markets for the study products
- ✓ Major end-use markets
- ✓ Current market size of study products in key markets
- ✓ Existing and projected demand-supply scenario
- ✓ Demand drivers for the study products
- ✓ Reviewing the raw material sourcing plan
- ✓ Reviewing the availability and pricing of raw materials
- ✓ SWOT Analysis of the Company
- ✓ Competition Analysis
- ✓ Reviewing the Marketing Plan.

1.4.3 Location Selection Review

Reviewing the selected location based on –

- ✓ Availability of sufficient industrial land for setting up the plant (taking possible future expansion in consideration)
- ✓ Socio-political stability of the location
- ✓ Land rate and cost of land development
- ✓ Proximity to raw material
- ✓ Proximity to markets for finished goods
- ✓ Availability of power, water and fuel
- ✓ Social infrastructure in the vicinity
- ✓ Availability of skilled manpower and related costs
- ✓ Tax benefits, if any
- ✓ Status of land.

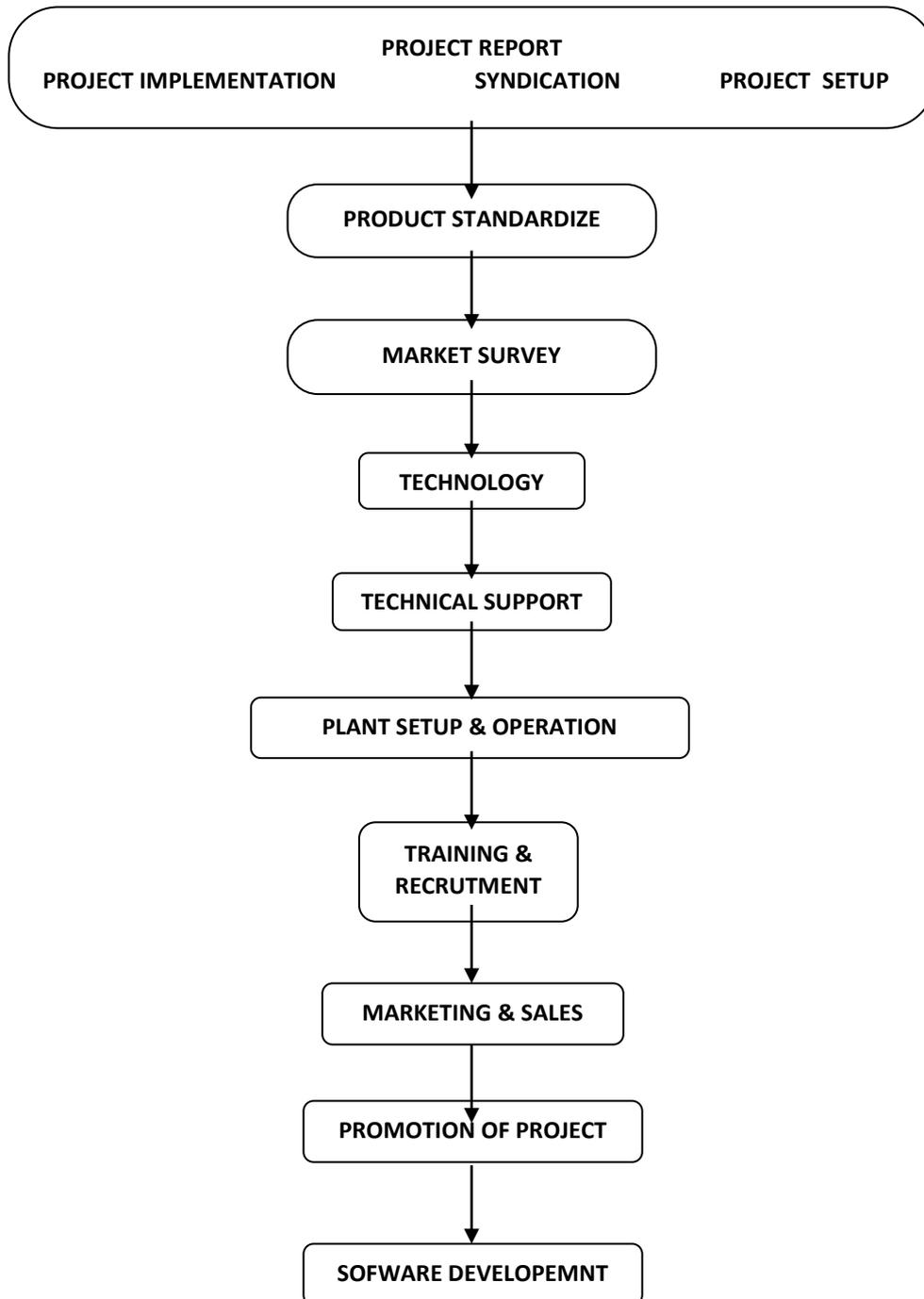
1.4.4 Technical Review

- ✓ Reviewing of technology being adopted
- ✓ Review of –
 - ✓ overall material flow
 - ✓ description of the process
 - ✓ technical specifications of the production plant & machinery required at the plant
- ✓ Review of the estimation of –
 - ✓ overall electrical power requirement
 - ✓ requirement of other utilities such as water, compressed air, fuel
 - ✓ typical facilities proposed at the plant
- ✓ Reviewing of the proposed implementation schedule
- ✓ Reviewing the estimation of manpower requirement and computation of annual wage bill
- ✓ Reviewing of Project cost estimation including cost of –
 - ✓ land and land development
 - ✓ buildings and civil work
 - ✓ plant & machinery
 - ✓ miscellaneous fixed assets
 - ✓ engineering, consultancy and other preliminary & preoperative expenses
 - ✓ contingency
- ✓ Reviewing of the environmental aspects of the Project

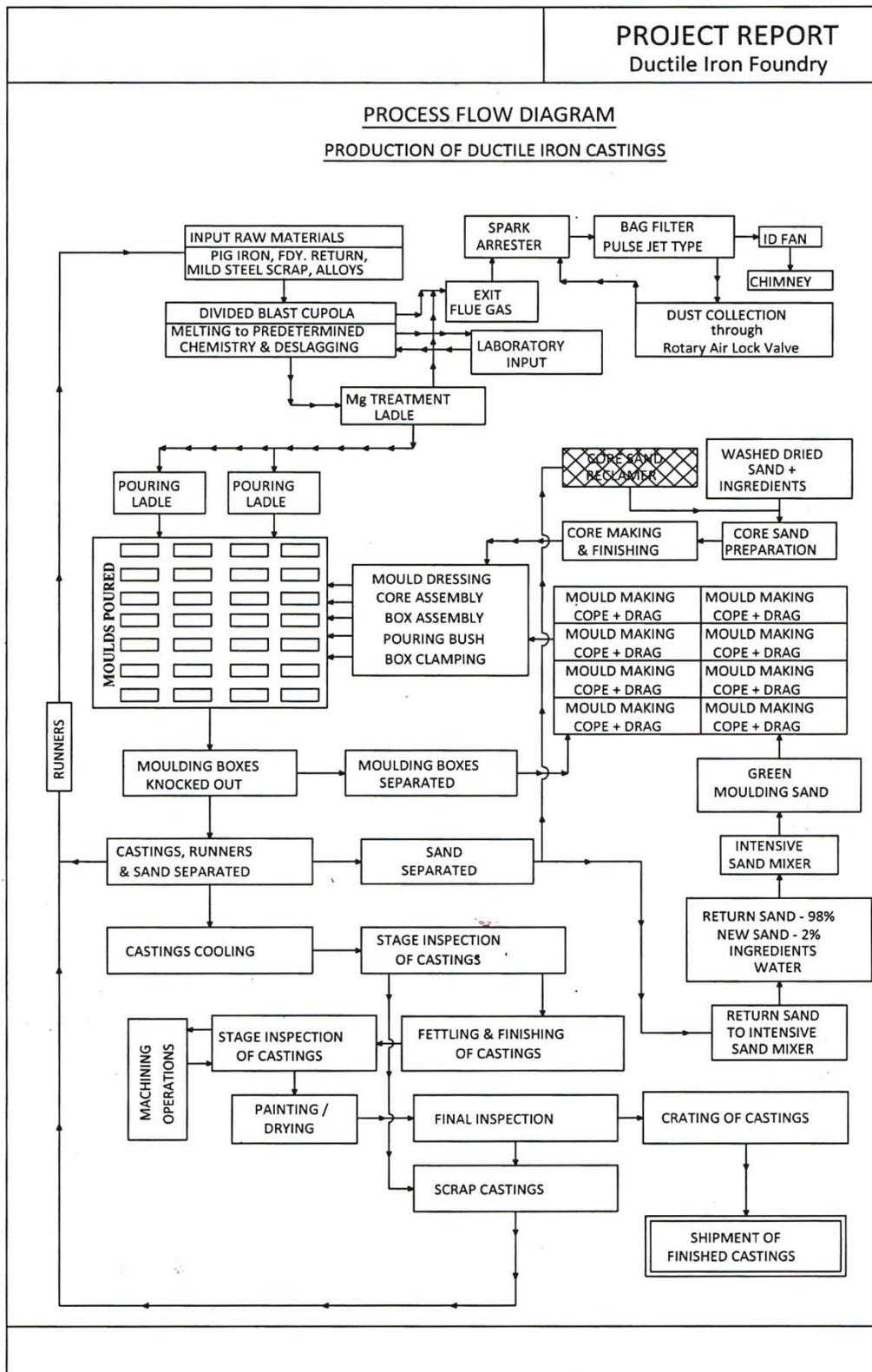
Project Configuration and Scope of Job

The Foundry Concept & Consultation with Plant setup including erection commission and trail run.

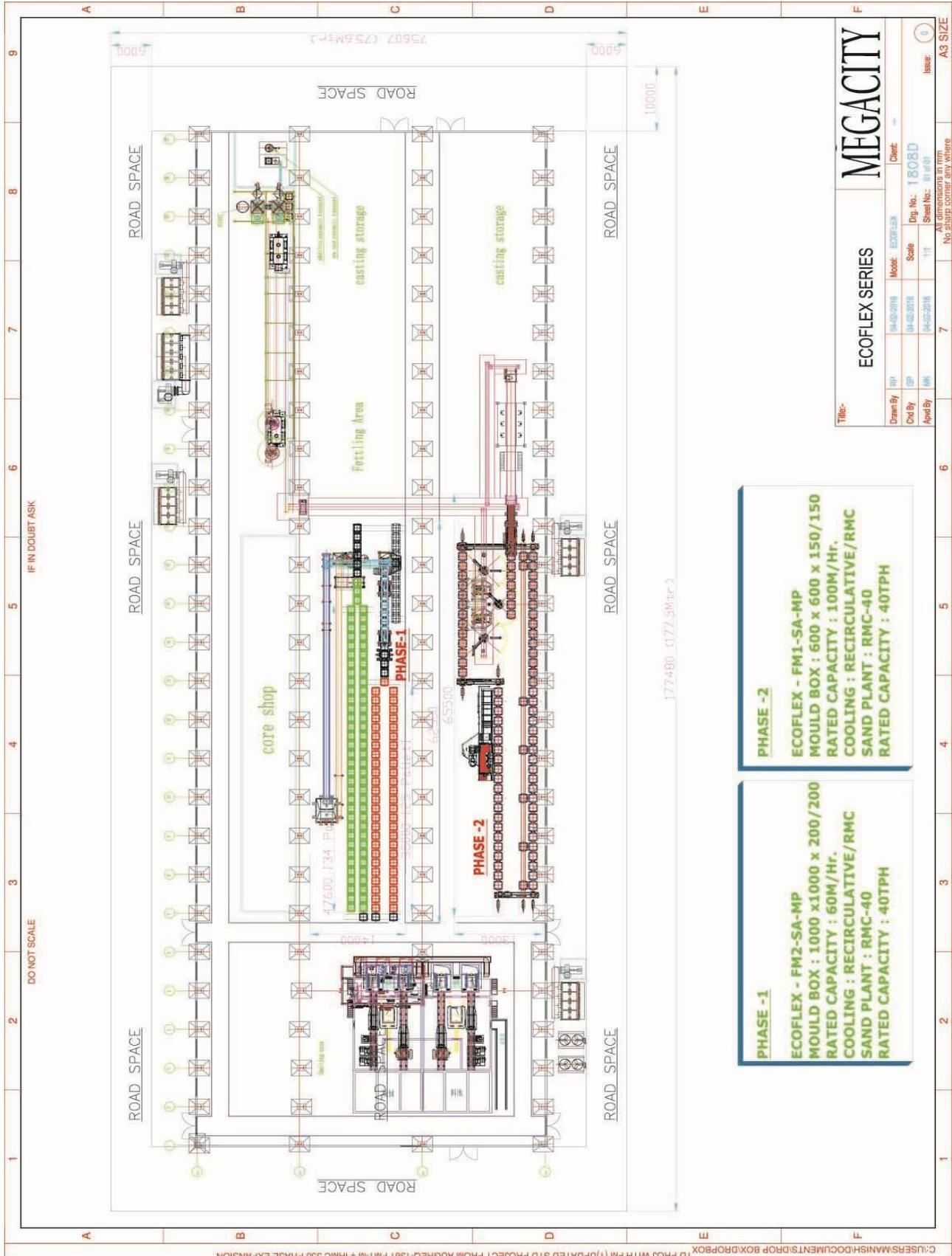
Figure 1: Project Configuration



MANUFACTURING PROCESS FLOW CHART



PROPOSED PLANT LAYOUT (MACHINERY)



PHASE -2
ECOFLEX - FM1-SA-MP
 MOULD BOX : 600 x 600 x 150/150
 RATED CAPACITY : 100M/Hr.
 COOLING : RECIRCULATIVE/RMC
 SAND PLANT : RMC-40
 RATED CAPACITY : 40TPH

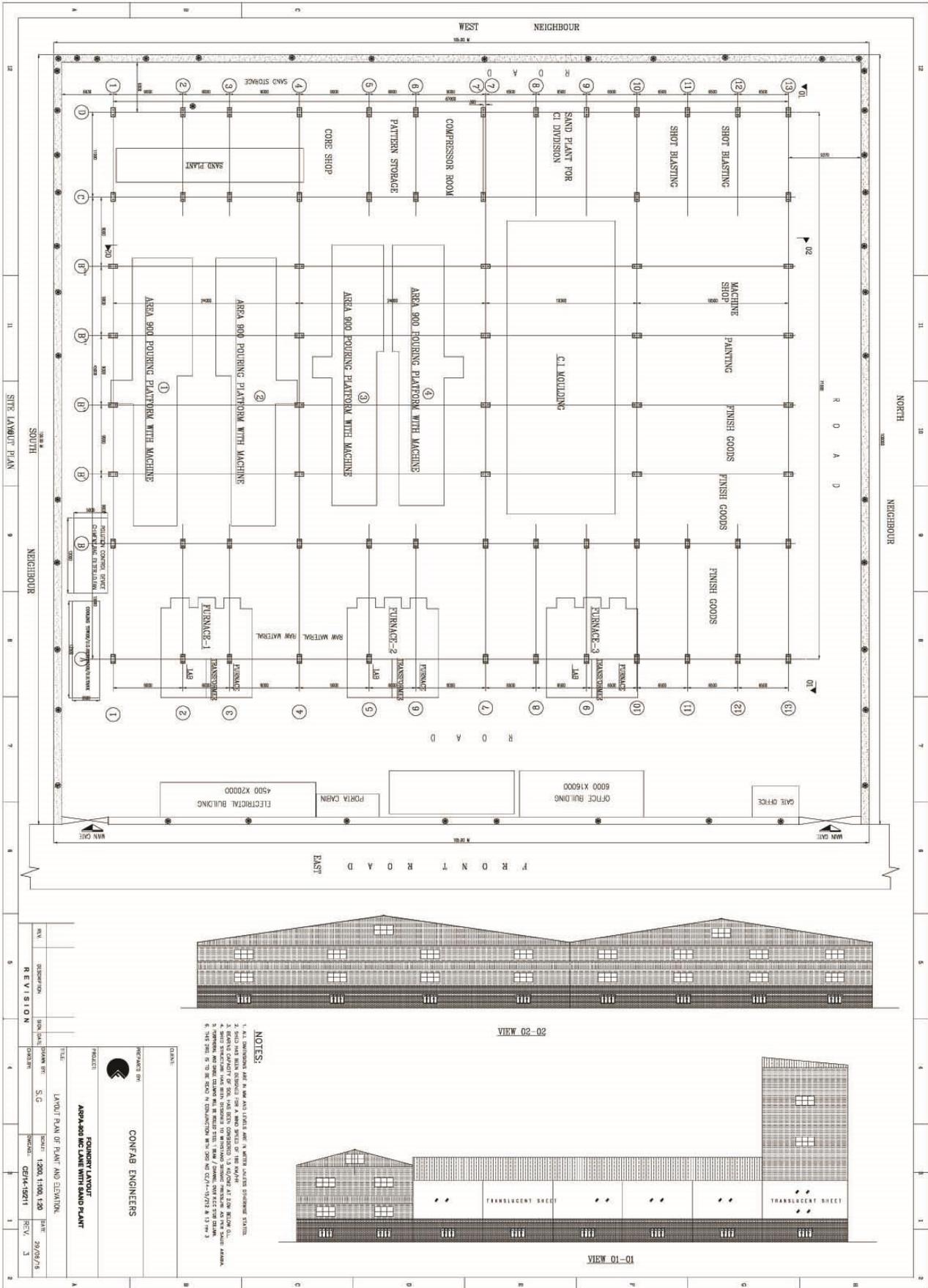
PHASE -1
ECOFLEX - FM2-SA-MP
 MOULD BOX : 1000 x1000 x 200/200
 RATED CAPACITY : 60M/Hr.
 COOLING : RECIRCULATIVE/RMC
 SAND PLANT : RMC-40
 RATED CAPACITY : 40TPH

Implementation Schedule

Figure represents the Implementation schedule of the proposed Project.

Sl. No	Activity	Implementation Schedule											
		FY2022			FY2023				FY2024				
		Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4			
1	Land & land Development												
a	Acquisition of land*												
b	Development of land	■	■										
2	Civil work		■	■	■								
3	Plant & Machinery												
a	Placement of Order	■											
b	Delivery at Site		■	■	■								
4	Erection of Equipment				■	■							
5	Commissioning					■	■						
6	Procurement of raw-material							■	■				
7	Training of personnel							■	■				
8	Trial runs									■			
9	Commercial production										■		

OVERVIEW OF PLANT LAYOUT



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1 Summary of Scope of Service

Description

Megacity India Scope

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SOFTWARE DEVELOPEMNT: Development and implementation of operational software specially designed for foundry project.

Al Kharj Scope:

The steel procurement to be organized at site by **Steel Fab 433 Tons appx.**

Megacity will depute the service eng. to guide audit this work. Also Megacity will provide the supervisory services for the installation and commissioning of the plant. The VISA, Air travel ticket Local stay/accommodation and conveyance of Our Engineers to be provided.

Price to be protected in USD, if there is any variation in exchange rate it's at Al Kharj cost.

2 Validity of Price

This quotation is valid until 90 days from the date of this offer. The prices are subject to the conditions stipulated below and the exclusions stated in Annexure II.

3 Detailed Scope of Service as mentioned above

The detailed description of work is stipulated in Annexure I

The supply includes documentation as under;

- a. General arrangement (GA) drawing – 4 weeks from Order and advance.
- b. Foundation layout drawing with load data for civil design of the plant – 1 week from GA approval.
- c. Detailed manufacturing drawing for the supports, platforms, Staircase, runways, pallet car, Rails & track details, etc – 4-5 weeks from GA approval in 2-3 lots.
- d. Operating and maintenance instruction manual – 2 hard copy & 1 soft copy – 1 week from date of despatch.

The delivery of documentation is considered to be a separate delivery and delivery time etc. does not apply to delivery of documentation.

4 Time of Delivery of all Technical Documents with site supervision.

The delivery from Megacity works is 5 months on Ex works Kolkata / India basis in 12 lots, from receipt of firm order and down payment, The estimated delivery date will be stipulated in the order confirmation and is conditioned by all terms of payment being kept.

Al Kharj to place the containers at MEGACITY works as required.

5 Local law requirements

After the agreement has been concluded the Promoter shall without undue delay inform MEGACITY about any local law requirements, including import requirements, which may affect MEGACITY's ability to perform its obligations under this agreement. In case local law requirements restrict MEGACITY's ability to perform in accordance with this agreement, the quoted price and the time of delivery shall be adjusted accordingly.

After MEGACITY has received information about local law requirements, MEGACITY will without undue delay notify the Purchaser in case an adjustment is needed and the adjustment will be subject to negotiations in good faith between the parties.

6) Legalisation charges:

If the Government of your Country / your bank required the documents to be notarized by the Consulate General of your country, in India, the actual charges charged by them will have to be borne by you.

Bank charges and financing costs applicable in India are to MEGACITY account and Applicable outside India are to be Al Kharj account.

7 Warranty and Warranty Period

MEGACITY will repair/Replace (at MEGACITY discretion) defects resulting from faulty design, materials or workman ship, which appear during the warranty period & for which MEGACITY is responsible. The warranty period shall constitute the shorter of the periods of 12 months from the date of commissioning or 18 months from the date of dispatch whichever is earlier.

The warranty dose not cover the defects or failures due to normal wear & tear (including parts in direct contact with sand) accidents, misuse, failure to observe the instructions for use, improper storage and maintenance, abuse or un-authorized alterations of any kind.

When a defect in the part of the equipment as been remedied a new warranty period of 12 months shall apply to the repaired/replaced part. However, MEGACITY shall not liable for defects in any part, including replacement and replaced parts, of the equipment for more than 12 months after expiry of the applicable initial warranty period.

MEGACITY warrants that the equipment complies with the applicable law in the country of manufacture. MEGACITY explicitly disclaims any responsibility for any other applicable law and it is the responsibility of the purchaser to ensure that the equipment confirms with local law requirement.

It shall be emphasized that the purchaser needs to ensure that the equipment is fit for the purchaser purpose and MEGACITY explicitly disclaims any responsibility in that respect.

8 Law and Venue

Any disputes between the parties concerning or related to this agreement by the laws of India (without regard to conflict of law rules) and settled by arbitrations in accordance with the rules of procedure of the Indian Institute of arbitration (Indian Arbitration). The arbitration tribunal shall be composed of 3 arbitrators. All members of the Arbitration shall be appointed by the Institute. The place of arbitration shall be Bangalore & language of arbitration shall be English.

9 General Conditions –

In addition to above specified terms, which are the mutually agreed terms, The “ORGALIME General Conditions for the supply and Erection of Mechanical, Electrical and Electronic Products” (ORGALIME SE 01) attached as Appendix 3 shall apply as an integrated part of any contract.

Special attention is drawn to the conditions stipulated in the General Conditions exempting MEGACITY for liabilities such as but not limited to loss of production, loss of profit and any other consequential economic loss.

These conditions shall substitute any general conditions of purchase and/or sale issued by Purchaser or Seller.

The equipment listed in this quotation will perform to and comply with only the specifications of capabilities and performance referred to and contained in this quotation. All other printed matter will constitute only an approximate guide and shall not constitute a binding part of any contract.

12 Force Majeure:

Should either party be prevented from executing the contract due to the case of force majeure such as war, serious fire, flood, typhoon, earthquake, strike at plant/sub-suppliers place and other cases which will be recognized by both parties upon agreement as being cases of force majeure, the time for implementing the contract (incl. Time schedules & B/G's) shall be extended by a period equivalent to the effect of the occurrences.

The prevented party shall notify the other party immediately after the occurrence of the force majeure by telefax and confirm within fourteen (14) days thereafter to the other party by registered mail the circumstances accompanied by a certificate issued by the competent authority.

Should the effect of the force majeure mentioned above last for more than one hundred and twenty (120) days, the parties shall settle the problem of further execution of the contract by amicable consultation and enter into an agreement about the further procedures as soon as possible.

13 Inspection of Equipment/Items:

MEGACITY will give 8 days advance intimation for inspection of the equipment once they are ready. Customer should depute their authorised representative for inspecting the goods. If inspection is not carried out within 8 days notice period, then it is treated that the goods are cleared without inspection and we shall give our inspection certificate.

14 Approval of order

Any purchase order based upon this quotation is subject to MEGACITY written order confirmation.

Please correspond all future communications to:

MEGACITY ENGINEERING (INDIA)

Regd. & Corporate Office

11, A Charu Avenue,
Kolkata – 700033 West Bengal, India

Tel +91 033 24242509

megacityengineering@rediffmail.com

Tapas Rudra Bhowmick

CEO

Date: 02.03.2023

Annexure:

Annexure I: Technical Specification of scope of service ---Please refer separate Sheet

Annexure II

Summary of Scope of Service and Price --- **ENQ 866/23 dated 02.03.2023**

Description of work:

PROJECT REPORT : Compiling Project Feasibility report and techno-commercial report with complete financial report , and market survey

SYNDICATION: Syndication & Co-ordination of various consultant globally.

PROJECT IMPLEMENTATION: Conceptualization and Expansion to reality.

PROJECT SETUP: Equipment selection with complete specification and find out best vendor / Supplier.

TECHNOLOGY: Find out worlds latest technology with value engineering services by various renowned consultant for practical feasibility with Budgetary aspect.

TRAINING & RECRUITMENT: Sourcing of best workforce from various renowned factory And provide training by us and by machine supplier.

TECHNICAL SUPPORT: Research & development on various machines for more productivity and to achieve absolute performance according our product with complete technical manuals.

PRODUCT STANDARDIZE : Standardize of product , preparation of drawing , design & other technical aspect for making dice, Mould & Pattern, Along with complete technical catalog.

PLANT SETUP & OPERATION: Err action & commissioning, recruitment of concern workforce under my complete supervision with the coordination of supplier & other concern people up to trial run.

MARKET SURVEY : Market survey with current market trend, future market trend , scope , list of buyers (globally), with complete data & planning with implementation.

MARKETING & SALES : According knowledge & experience of Sales & Marketing , We will recruit some renowned marketing people who are know to me since long can ensure performance & also arrange for training of junior candidate for follow up & carry out.

PROMOTION OF PROJECT: Development of Web Site, Internet publication, Web page, news letter circulation.

SOFTWARE DEVELOPMENT: Development and implementation of operational software specially designed for foundry project.

Country of Origin/Place to Dispatch

Country of Origin India/Place to Dispatch/Work KSA, Al Kharj, Riyadh.

**TOTAL PRICE, FOR COMPLETE OFFER \$ 4.38 MILLIONS USD
FOUR MILLION THREE HUNDRED AND EIGHTY THOUSAND USD**



Office · 11A Charu Avenue Kolkata - 700 033 West Bengal India
Tel. : 2424 2509, Fax : 2424 4822 Mobile : 98300 60210
E-mail : megacityiron@yahoo.com web site : www.megacityiron.com

TERMS OF PAYMENT-

- 30% advance by SWIFT transfer. MEGACITY will send Proforma Invoice specifying bank details.
- Balance full value payable less advance of within stipulated periods as mentioned at our final contact.
- The following standard terms and conditions are intended by the parties to govern all the purchases of equipment, parts or service from seller, and together with the specifications provided or embodied he represent the entire understanding of the parties without exception. All other terms and conditions specifically rejected, and by proceeding with the transaction in any manner, both seller and purchase that this standard terms and conditions shall control. The price charged by seller is based on these sight terms and conditions.

- **Price**

All the prices quoted are in US Dollars, export packed various ports from INDIA.

- This a budgetary standard offer as of date of submission. Based on International Market, compressing exchange value of currency.
- We have designed the entire plant with world best technology, of plant & machinery with the recommendation as given by us.

- **Validity**

This offer will mature when both the party will sign amicable contract and MOU, and then we will submit our final terms and conditions on entire TURNKEY.

The payment shall be making for the above specified period with an additional negotiation period of 21 days from the date of last assignment.

Our Banker details:

Installation & Commissioning

Megacity will supervise the erection & commissioning, charges for the same are mentioned above.

Megacity India will provide service engineers for 100 days.

Al Kharj to organize local lodging, boarding & conveyance.

Al Kharj to organize visa at their cost.

Utilities considered for the subject offer are – which will be shown in the General arrangement drawing;

- Voltage : 415 Volts, 50 Hz, 3 Phase, 4 wire AC. – **TO BE CONFIRMED BY AL KHARJ**
- Control voltag : 24 V DC.
- Pneumatic air – machine with 2 Nos 3 Cu M air tank (Al kharj scope) suitable for 7 Bar pressure.
- Water: at 3-4 bar for the Mixer and secondary cooling system.

Annexure II: Exclusions

Unless expressly stated, our offer does not include deliveries and services not mentioned such as, but not limited to:

- All sorts of local taxes, VAT, import duties etc.
- Extra costs due to import restrictions, environmental requirements, certification of the consignment, or other requirements relating to local law
- Changes to local law requirements regarding issued which may affect the delivery of the consignment, e.g. taxes, import duties, environmental requirements etc.
- Unloading of equipment and transportation to foundations, here included any use of crane, forklift and other transport and lifting equipment
- Any building or civil works, incl. foundations, lighting, general ventilation and sewage connections
- Foundation frames and plates, foundation bolts, pits reinforcement, covers and grates
- All stairs, ladders, handrails etc.
- Tools other than specified
- Supply of all electrical feeder installations to delivered panels
- Spare parts other than specified
- Painting in other colours than Megacity India's and Megacity India Limited sub-supplier's standard
- Air extraction hoods and ventilation system unless specified
- Insulating and heating of ventilation installations
- Any cleaning of equipment and site
- Any erection work, materials, tooling etc. other than specified in the specification sheets
- Installation for or connection to electric power, compressed air and water supplies other than specified in specification sheets
- Filters and water separators for utility supplies
- Supply of any raw material and utilities such as dry compressed air, water, gas, electricity etc, including the supplies during installation and running-in, testing, commissioning and operation
- Water re-cooling system
- Supply of hydraulic and lubricating fluids and greases
- Re-charging of hydraulic accumulators
- Engineering other than specified in this quotation
- Training of Buyer's personnel unless specified
- Vulcanising of rubber belts
- Patterns, pattern plates, buffer (adapter) plates, lifting shoes etc.
- Moulding boxes, Pallet car tops..
- Moulding box bushes and pins.
- Match plates, pins, hardware.

- Initial fill of oil / lubricants.
- Compressor, receiver near the machine - to maintain adequate quantity of air, compressed airline.
- Pneumatic hose from airline to the equipment.
- Supply of Electrical cables, Electrical cable laying from mains to the control panel and control panel to the equipment, in case of automatic machine.
- Moulding box lifting tackles.
- Down sprues, gating, vent pipes, mould box clamps.
- Pollution control equipment / devices.

for Megacity India,

EXCLUSIONS

The following are expressly excluded from our scope of supply and to be arranged by you :-

- ✓ Preparation / modification to foundations, any civil work.
- ✓ Levelling pads, foundation bolts, grouting of the machine.
- ✓ Building and alterations to building.
- ✓ Structural modification / fabrication of the equipment other than those specifically mentioned in our offer.
- ✓ Unloading from carriers and moving materials to your godown / storage and unpacking.
- ✓ Storage at site, storage insurance, etc.
- ✓ Leading materials from your warehouse to workspot.
- ✓ On-site installation, assembly, testing and commissioning, including labour, handling facilities, etc.
- ✓ Supply of electrical, mechanical installation materials other than those mentioned in the offer.
- ✓ Idlers, beltings, overband magnetic separator, monorail hoists, liners for hoppers, pull chord switches, limit switches, proximity switches, gravimetric weighing devices etc..
- ✓ Pneumatic, water connection/ supply for the sand mixer, V-Plough etc..
- ✓ Water pump, sump arrangement etc.
- ✓ Initial fill of oil, lubricants etc.
- ✓ Any statutory levies payable at site.
- ✓ Dust / fume extraction system including necessary ducting.
- ✓ Any statutory clearance from Government bodies.
- ✓ All mechanical & electrical installation materials.
- ✓ All mechanical & electrical utilities.
- ✓ All production raw materials, toolings etc.
- ✓ Finish paint for all sand plant equipment (please note that we shall be supplying all the equipment with two coats of redoxide primer only).
- ✓ Patterns, pattern plate with pins, adoptor plate, pattern bolster etc.
- ✓ Moulding boxes, bushes, pins and Moulding lifting tackles.
- ✓ Down sprues, gating, vent pipes, mould box clamps, etc.
- ✓ Compressor, receiver, piping, etc for compressed air.
- ✓ Incoming supply cable to the control panels and from control panel to the respective devices/ equipment , cable trays, lugs, proximity switches, termination and termination accessories, etc.
- ✓ Belt laying and Vulcanizing.
- ✓ Rails and ties, mould jackets, mould weights, etc.
- ✓ Hydraulic pipes, fittings, clamps etc and pipe laying between powerpack and the cylinders/devices.

Any other work or item not specifically mentioned herein in the offer or not discussed.

for Megacity India

TERMS & CONDITIONS

Scope

Our offer is for design and erection commission of the equipment as per the offered of the quotation and is subject to the following terms and conditions. Megacity would also submit the General Arrangement drawing and foundation load data for the equipment.

Our offer expressly excludes the items mentioned in the Exclusion list which is enclosed.

Prices:

The price is ex-works Tumkur basis. Megacity shall charge extra @ 1% towards the marginal packing. The critical equipment/components will be crate packed, and the other equipment will be sent in roadworthy packing. If full packing is required, then the same can be done at extra charges @ 3% of the basic value.

The prices indicated do not include sales tax / general tax, octroi/excise duty and any other local/municipal/state/central government levies. These will be on customer's account.

Present rate of excise duty & sales tax is 10.36% & 2% against 'C' form respectively. Any statutory variation in government levies or additional imposition of government levies shall be to your account. The 'C' form should be issued positively before commissioning of the equipment.

Transit insurance shall be arranged by customer. Megacity to give despatch details by E-mail / Fax, to enable customer to arrange for Transit Insurance.

Payment Terms:

40% advance along with the order and balance 60% with 100% taxes and duties against Proforma Invoice, subject to inspection of the equipment at our works prior to despatch.

Should the despatch be delayed after being offered for inspection, for reasons not attributable to Megacity, such as delayed payment etc., interest is liable to be charged on the overdue payment @ 2% per month, for the delayed period.

Bank Charges:

Customer bank charges to customer account, Megacity bank charges to Megacity account.

Delivery Schedule:

Complete despatch 6 – 7 months, from the date of technically and commercially clear order and receipt of advance at Megacity end.

The delivery period specified is on Ex-works all India basis and the time required for the transportation to site is extra, which needs to be considered by customer. The exact date of delivery will be confirmed at the time of Order Acceptance, subject to receipt of advance, clarifications, if any and other commitments.

Despatch Documents:

Megacity shall furnish the original & transporters copy of invoice, delivery challan, L/R copies and packing list against the despatch.

Spare Parts:

Megacity will send a list of recommended spare and wear parts, along with operating & maintenance instruction manual.

Painting:

All the stand alone equipment (except the structures) will be supplied with finish coat. Experience however shows that a final coat or touch-up of the painting is required after the completion of installation & commissioning. This has to be carried out by the Buyer at his cost.

Color:

RAL 1012 Yellow - Movable parts, platform railing, gas piping, hydraulic piping.

RAL 5024 Blue - Stationary Parts.

RAL 5009 Blue - Air Piping

RAL 6010 Green - Water Piping

RAL 9005 Black - Stripes on Moving Parts.

RAL 2004 Orange - Mounting rack inside the Panel.

RAL 7035 Grey - Electrical Panel, Junction Box.

RAL 5024 MEGACITY Blue - ARPA machine – Stationary parts

Erection & Commissioning:

Megacity scope does include supervision of erection & commissioning. However, customer to organize handling facilities, tools, tackles, consumables etc., required for erection, commissioning & running of the plant.

Also, during visit of Megacity Service Engineers for supervision of erection & commissioning, they need to be provided with food & beverages by customer, free-of-charge. If customer has canteen facility, it will be used by our Engineer & suitable instructions to be given to appropriate personnel at customer's end. If the customer does not have canteen facility, the food & beverages to be organized along with customer's Employees, by the customer & applicable charges to be collected from the Engineer.

Guarantee:

We undertake to replace / repair at our sole discretion any defective parts that need replacement or repair by reasons of defective workmanship / material brought to our notice within 12 (twelve) months from the date of successful commissioning or 15 (fifteen) months from the date of despatch, whichever is earlier, provided that if so required by us, the parts are sent to our works, at your expense. Should there be any delay in delivery / despatch due to the Buyer, then the guarantee period shall commence from the date of intimation of readiness of the equipment for inspection / despatch.

The guarantee is valid only if the equipment is operated and maintained in line with the operating & maintenance manual and usage of original spare parts as listed in our manual. In case the spares are procured by the buyer from other sources, then the guarantee automatically stands null and void.

This guarantee is not valid for fast wearing items like rubber seals, gaskets, trade bought-out items like motors, gear boxes, bearings, valves, electrical components, magnets, cylinders, liners etc., which may form a part of our supply.

Under no circumstances do the sellers undertake any liability for indirect or consequential loss or damage of any nature. This guarantee is given in lieu of and excludes any conditions of the warranty, whether statutory or otherwise not herein expressly set out.

The contract stand null & void, if the equipment is not commissioned within the warranty period, for the reasons not attributable to Megacity India.

The liability of supervision of commissioning from Megacity is treated as completed from 6 months from the date of dispatch from Megacity works.

Force Majeure:

Should either party be prevented from executing the contract due to the case of force majeure such as war, serious fire, flood, typhoon, earthquake, strike at plant/sub-suppliers place and other cases which will be recognized by both parties upon agreement as being cases of force majeure, the time for implementing the contract (incl. Time schedules & B/G's) shall be extended by a period equivalent to the effect of the occurrences.

The prevented party shall notify the other party immediately after the occurrence of the force majeure by telefax and confirm within fourteen (14) days thereafter to the other party by registered mail the circumstances accompanied by a certificate issued by the competent authority.

Should the effect of the force majeure mentioned above last for more than one hundred and twenty (120) days, the parties shall settle the problem of further execution of the contract by amicable consultation and enter into an agreement about the further procedures as soon as possible.

Inspection of Equipment/Items:

Megacity will give 8 days' advance intimation for inspection of the equipment once they are ready. Customer should depute their authorised representative for inspecting the goods. If inspection is not carried out within 8 days notice period, then it is treated that the goods are cleared without inspection and we shall give our inspection certificate.

Pre-dispatch inspection of the equipment at our plant can be carried out only by customer employees and no external agencies are permitted to inspect these equipment.

Operation & Maintenance Instruction Manual:

Two (2) sets of manuals will be supplied immediately after despatch of the equipment.

Training:

Megacity staff will train customer staff on site during supervision of erection & commissioning period.

Disputes & Jurisdiction:

The dispute or differences arising out of or in relation to these transactions shall be amicably settled by referring to arbitration under Indian Arbitration Act 1940 and amendment thereof. Such arbitration shall take place at Bangalore.

IP Rights

All designs, drawings or other written information provided by Megacity to Buyer in connection with this Proposal are received in confidence and remain the property of Megacity. Buyer shall not use or disclose any information relating to designs, drawings or other written information without the prior written consent of Megacity. Megacity does not convey or grant to Buyer by virtue of this Proposal any reproduction rights to the design, drawings or specifications.

Validity:

Our offer is valid for a period of ninety days from the date of offer, after which it is subject to our confirmation in writing.

Utilities:

The equipment offered vide this quotation is suitable for following specifications of utilities.

a. Input Voltage: 415 Volts, 3 Phase, 50 Hz or 220 Volts, Phase 50Hz.

Control Voltage: 220/110 Volts, Single Phase, 50 Hz or 24 Volts DC

Variation permissible: Voltage + 6%, Frequency + 3%

b. Compressed air: Moisture free clean air at pressure at 6 bar at the point of consumption.

Any deviation from the above will reflect on the rated performance of the equipment, according to the parameters concerned. Purchaser will arrange at his cost the necessary modifications at his site, to ensure specified supply of utilities.

Order Cancellation:

Cancellation of orders placed by the Purchaser will not be acceptable under normal circumstances.

However, if the situation arises then the following cancellation charges will apply on the basis of receipt of intimation of order cancellation at our office from the date of purchase order.

a. Within 15 days : forfeiture of 25% of the advance amount paid.

b. Within 16 – 45 days: forfeiture of 50% of the advance amount paid.

c. Within 46 – 90 days: forfeiture of 75% of the advance amount paid.

d. 91 days and above: forfeiture of 100% of the advance amount paid.

General Condition:

The purchase order based on this quotation is subject to the Order Confirmation issued by Megacity India,

for Megacity India,

General Terms of Consulting Services of our German and U.K. Engineers

1 Consulting services are being made available and executed internationally on my behalf subject to the following terms. Services include the provision of a standard notebook computer with Windows 7 as installed operating system and operational software covering word processing, spreadsheet, and project management and presentation requirements. The available standard document exchange format is PDF.

2 Applicable hourly rates

Subject to the Venue of Contract Fulfillment to be within the Federal Republic of Germany, hourly rates are including travel to and from the Venue of Contract Fulfillment and including accommodation and meals.

2.1 If on-site availability is required, the following rates apply:

1) Travel activities, arising within the course of contract fulfillment, into areas of differing hourly rates entitle to invoice customized hourly rates respectively, subject to the applicable total contract duration.

2) Countries bordering the Mediterranean Sea and west of Belorussia, Ukraine and Moldavia 3) Countries except EU, Switzerland and as specified according to 2)

The aforementioned rates refer to working day service hours Mondays thru Fridays from 08h00 until 19h00 local time deducting a daily total rest period of one hour. A minimum of eight hours are to be accounted for every begun working day. Saturday work time between 08h30 and 14h30 is negotiable for reasons of project urgency. Unless explicitly negotiated and unless the Principal has agreed to rates increased by at least 75%, Sundays and legal holidays are generally unavailable.

2.2 Availability with respect to a project not requiring on-site presence will be accounted for on an hourly basis of € 135.– per every begun hour.

3 Rates apply exclusively to services on my behalf or provided by subcontractors and / or by employees on my behalf. Services provided by third parties, e.g. laboratory or workshop services, shall be made payable according to third parties' invoice by the Principle directly or be optionally subject to the Principle's negotiation of such third-party services immediately with their providers.

4 Services will be invoiced upon conclusion of every contractual calendar month. Invoices are payable without deduction only in the currency specified in accordance with the invoice. Corresponding account credits must be confirmed within ten working days upon receipt of invoice by the Principle or his authorised representative. Payments in delay entitle me to charge interests rated at 12% p.a., applicable to each day of delay.

5 Expenses arising by any travel activity on my behalf or on behalf of my subcontractors and / or employees, being a necessity in the course of the fulfillment of a contract, are to be born by the Principle based on accounted duration as well as presented receipts in relation to travel tickets, accommodation, formalities and provision.

5.1 The duration of such travel is entirely subject to applicable rates as specified under Item 2.1.

5.2 Further details regarding the costs of travel are as follows:

5.2.1 Generally, the choice of the means of transportation remains to be at my discretion.

5.2.2 Travel by car subject to my provision within Germany are rated with € 0.85/km and in countries other than Germany with € 1.15/km.

5.2.3 Travel by train will be booked First Class including reservation fees and transportation to and from train stations arranged by taxi.

5.2.4 Flights are to be booked with choice of Economy Class for air travel's duration not exceeding one hour, otherwise with choice of Business Class. If bookings should not be made by myself, appropriate travel arrangements are to be arranged expressly subject to my consent. Transportation to and from airports is to be made at my discretion by rented car or taxi. Applicable parking fees will be charged entirely.

5.2.5 Hotel bookings are generally made by myself as single room bookings incl. breakfast. If bookings should not be made by myself, appropriate hotel arrangements are to be made expressly subject to my consent.

5.2.6 National formalities, e.g. visa, entry / exit permits, work permits, local registrations, etc, whichever are / will become necessary for a local performance on my behalf or on behalf of my subcontractors and/or my employees, are entirely at the responsibility of the Principle. The timely establishment and / or providing of respective permissions / grants regarding my / our contract fulfillment is to be ensured the Principle. Failure to comply herewith or with the required correctness regarding the process of obtaining permits does not impair my entitlement of invoice to the extent of the agreed contract period(s) in full, as well as to the extent any incurring travel costs.

5.2.7 Mandatory or recommended precautionary medical measures on my behalf or on behalf of my subcontractors and/or employees regarding the Venue of Contract Fulfillment are to be born fully by the Principal.

6 Rates as specified under Item 2.1 and Item 2.2 are to be understood as not including any VAT, as may be legally required. If tax legislation applicable to a Venue of Contract Fulfillment impose local taxation, regardless of the tax liability, to which I, my subcontractors or my employees are subject to within the EU, the Principle shall bear local taxation, respectively, in full.

7 Should the Principle withdraw from a contract or shorten its duration, this shall have no affect on my entitlement to invoice according to the agreed contract to its full extent including any incurring return travel from the Venue of Contract Fulfillment, as stipulated within Item 6. Contract terminations, as ruled by Item 15, thereby remain unaffected.

8 Any performance / obligation shall be suspended in the event of force majeure for the duration of the occurrence of force majeure without any effect on legal obligations or entitlements. As force majeure are to recognized work stoppages, strikes, interruptions of power supplies or of online services (e.g. availability of the Internet), traffic impairments or obstructions, e.g. regarding road, rail or air transportation, theft, vandalism, technical defect or equipment failure, illness, death, bankruptcy, or legal constraints impairing or impeding a timely performance of contract commitments on my behalf and / or on behalf of my subcontractors and/or employees.

9 Every performance on my behalf and/or on behalf of my subcontractors and/or employees will be executed to the best of my/our knowledge and by abiding to the principle of maximum thoroughness, however, subject to the explicit exclusion of any liability. Furthermore, any mutual liability between my sub-contractor(s) and / or employee(s) and myself as well as any liability with their behalf to any third party shall be expressly excluded.

10 Regarding the fulfillment of contract obligations and the corresponding performance on my behalf or on behalf of my subcontractors / employees, the co-operation by the Principle and / or access to his/her premises or free use of his/her operating facilities must be fully available, if required, as any contract fulfillment may be subject to such requirements to have been met to the extent needed in full. Should such requirements not be met in part or entirely, this shall not affect my entitlement to invoice according to the agreed contract. Latest by the time of the beginning of contract fulfillment the Principle shall appoint a person - and, if applicable, his/her deputy - before whom I am to prove contract fulfillment and to whom I am to address invoices. This person shall be regarded to rule competently as a Principle's attorney between the Principle and me / us during the contract period. In the event of unavailability of such person(s), the Principle must rule replacement arrangements without delay.

11 If not agreed otherwise within the course of finalization of the Contract, the Principle subdues to these presented Rates and General Terms for Freelance Consulting Services, waiving contradictory regulations on his or her behalf. This is expressly true in the event of conflicting terms not to have been contradicted on my behalf.

12 If not otherwise agreed, contractual relationships, to which I have consented as well as their resulting rights and legal obligations shall be governed exclusively by the Law of the Federal Republic of Germany at the exclusion of all regulations of German International Private Law. The application of the law(s) of a third state, including its rules on the resolution of conflict of laws as well as the application of the UN Sales Convention are expressly excluded. I reserve the unrestricted right to call on legal representation and / or counseling. Furthermore, I reserve the right to appoint a venue of legal dispute as well as to call on arbitral procedures to render settlement to a dispute and to entitle the rendered settlement as being final.

13 As a general way of procedures, I confirm absolute confidentiality in dealing with contents of requests, quotations, reports and other details concerning clients and prospective customers. If needed, I will concede to the agreement of non-disclosure agreements.

14 Within the course of fulfillment of contract duties no license rights whatsoever are transferred or made available to the Principle or to his/her deputy/deputies, whether on my behalf nor on behalf of my subcontractors and/or employees, whether in part nor in full. The Principle must ensure that rights of third parties remain unviolated within the context of fulfillment of the contract, based on my/our use of any facilities within the Principle's discretionary responsibility. Claims by third parties, arising e.g. from a failure of the Principle to secure such rights of legal access and to prevent their violation shall not be recognized on my behalf.

15 Details regarding a premature or an extraordinary contract termination shall be ruled within the individual contract. In any case, notices of such contract termination must be provided in writing with proof of delivery.

16 Should any of the provisions within the aforesaid become invalid on account of respective laws, this shall not affect the validity of the remaining provisions.

17 Modifications, ancillary agreements or agreements which, by any means, relate to the provisions laid forth herewith, shall be made in writing and always be countersigned.

18 In case of doubt and / or dispute, only the German version of the Rates and General Terms for Freelance Consulting Services shall be decisive for their final validity.

19 The aforementioned Rates and General Terms for Freelance Consulting Services in their present setting will remain valid for a period of 12 calendar months upon the date of their last update as mentioned under Item 20.

20 The aforementioned Rates and General Terms for Freelance Consulting Services correspond to their setting as of March 02, 2023.

Scope of Erection Commission & Fabrication

No. Qty. Description Scope of work

1 1 Shake-out A. MEGACITY INDIA scope of supply:

Model : RVA 1.5 x 2.0- 3 Shake-out complete.

Capacity : 3 t

Grid size : 1500 x 2000 mm C. Customer's scope of fabrication: Made out of MS flat sections. Supporting structure. Supported on 6 nos. of heavy duty springs and driven by 2 nos. of vibro motors

2 1 Grid with Chute below shake out C. Customer's scope of fabrication:

Made out of 6 mm thick plate Grid with Chute below shake out suitably reinforcement.

3 1 Oscillating Conveyor A. Megacity India scope of supply:

To be located below the shake-out Oscillating conveyor to take care of the surge load.

Model : FVE 0.6 x 3.3 C. Customer's scope of fabrication:

Trough size : 600 mm wide x Supporting structure for the above.
3300 mm long.

Driven by 2 nos. vibro motors

4 1 Belt Conveyor A. Megacity India scope of supply:

Trough type Drive mechanism, comprising of geared motor

Width : 650 mm head pulley assembly with drive unit,

Centre to centre : 26 m mounted on a fabricated frame and tail pulley

Drive: 7.5 kW assembly with tensioning device.

Belt speed : 1.0 m/sec

Tensioning arrangement : Screw type B. Customer's scope of bought-out:

Flat carrying and return idlers, snub pulley, HR grade belting along with Proximity switch Zero Speed Monitor, Pull Chord Switch

and Junction Box C. Customer's scope of fabrication:

Runway, receiving skirt, discharge hood with chute, walkway and supporting structure.

5 1 Over band magnetic separator B. Customer's scope of bought-out:

For removing the iron particles from the Over band magnetic separator.

return sand system. Air cooled, permanent magnetic type. Suitable for C. Customer's scope of fabrication:

650 mm wide belt conveyor, operating Supporting structure for OBMS.

height 150-175 mm

India scope of supply:

Trough type Drive mechanism, comprising of geared motor Width : 500 mm head pulley assembly with drive unit,

Centre to centre : 10 m mounted on a fabricated frame and tail pulley

Drive: 3.7 kW assembly with tensioning device.

Belt speed : 1.0 m/sec

Tensioning arrangement : Screw type B. Customer's scope of bought-out:

Flat carrying and return idlers, snub pulley, M 24 grade belting along with Proximity switch Zero Speed Monitor, Pull Chord Switch and Junction Box

C. Customer's scope of fabrication:

Runway, receiving skirt, discharge hood with chute, walkway and supporting structure.

8 1 New Sand Grid with Chute C. Customer's scope of fabrication:

Grid with Chute

9 1 Bucket Elevator A. Megacity India scope of supply:

Capacity : 40 m³/hr Top casing assembly consisting of head pulley

Casing size : 1200 x 550 mm supported on bearing blocks with geared motor

Centre to centre distance 24 m and hold back arrangement. Bottom casing Bucket : FRP, 6.0 lit capacity assembly consisting of tail pulley, gravity take up

Drive: 11 kw unit, receiving chute. The FRP buckets fixed

Belting: 800/5 ED, 450 mm wide on extra heavy duty nylon belting. Bucket

M 24 grade, 2 mm top & elevator is non scooping type.

2 mm bottom cover

Tensioning arrangement : gravity type C. Customer's scope of fabrication:

Belt edge guide rollers are provided on Intermediate casings maximum length of 3000 either side of top & bottom casing, where

as belt support rollers provided on either of every intermediate casing.

10 1 Polygonal Screen A. Megacity India scope of supply:

Model : TS - 5 Polygonal screen.

Capacity : 40 m³ /hr. Drive : 5.5 kW

11 1 Over-size chute C. Customer's scope of fabrication:

Scope of Erection Commission & Fabrication

For discarding oversized lumps from Fabrication of oversize chute. polygonal screen. The chute made out of 3 mm thick MS plate.

Sand Cooler Junction--II Phase

12 1 Storage hopper above cooler B. Customer's scope of bought-out:

Capacity: 40 m³ UHMWPE liners of 12 mm thick.

Made out of 10 mm thick m.s plate with suitable reinforcement. Inside C. Customer's scope of fabrication:

surface is lined with plastic material. Hopper

13 1 Feeder Belt Conveyor A. Megacity India scope of supply:

Flat type Drive mechanism, comprising of geared motor

Width : 650 mm rubber lagged pulley assemblies provided

Centre to centre distance : 7 m on both ends of the belt conveyor with drive units

Drive: 5.5 kW mounted on fabricated- frames with gravity type

Belt speed : 0.5 m/sec arrangement on one side.

Tensioning arrangement : gravity type B. Customer's scope of bought-out: Flat carrying idlers, return idlers, snub pulleys, HR grade rubber belting.

C. Customer's scope of fabrication:

Stringer, skirting, discharge hood with chute and the supporting structure.

14 1 V-Plough A. Megacity India scope of supply Suitable for 650 mm wide belt V Plough conveyor, Pneumatically operated, complete with skid plate, discharge chute etc.

15 1 Fluidised Bed Sand Cooler A. Megacity India scope of supply:

To cool and premoisten the return sand Sand Cooler : SKA 575

Model : SKA 575

B. Customer's scope of bought-out:Water pump

C. Customer's scope of fabrication: Cyclone, Ducting, Baseframe, Field installation

16 1 Belt Conveyor A. Megacity India scope of supply:

Trough type Drive mechanism, comprising of geared motor

Width : 650 mm head pulley assembly with drive unit,

Centre to centre : 9 m mounted on a fabricated frame and tail pulley

Drive: 3.7 kW assembly with tensioning device.

Belt speed : 1.0 m/sec

Tensioning arrangement : Screw type B. Customer's scope of bought-out:Flat carrying and return idlers, snub pulley, M24 grade belting

C. Customer's scope of fabrication:

Runway, receiving skirt, discharge hood with chute, walkway and supporting structure.

17 1 New Sand grid with chute C. Customer's scope of fabrication:

The grid is fabricated from m.s sections Grid with chute and the chute made out of 6 mm thick m.s plate suitably reinforced

18 1 Bucket Elevator A. Megacity India scope of supply:

Capacity : 40 m³/hr Top casing assembly consisting of head pulley

Casing size : 1200 x 550 mm supported on bearing blocks with geared motor

Centre to centre distance 24 m and hold back arrangement . Bottom casing

Bucket : FRP,6.0 lit capacity assembly consisting of tail pulley, gravity takeup

Drive: 11 kw unit, receiving chute. The FRP buckets fixed Belting: 800/5 ED, 450 mm wide on extra heavy duty nylon belting. Bucket M 24 grade, 2 mm top & elevator is non scooping type.

2 mm bottom cover

Tensioning arrangement : gravity type C. Customer's scope of fabrication:

Belt edge guide rollers are provided on Intermediate casings maximum length of 3000 either side of top & bottom casing, where

as belt support rollers provided on either of every intermediate casing.

Sand Cooler Junction Completed

19 1 Belt Conveyor A. Megacity India scope of supply:

Trough type Drive mechanism, comprising of geared motor

Width : 650 mm head pulley assembly with drive unit,

Centre to centre : 21 m mounted on a fabricated frame and tail pulley

Drive: 7.5 kW assembly with tensioning device.

Belt speed : 1.0 m/sec

Tensioning arrangement : Screw type B. Customer's scope of bought-out:

Flat carrying and return idlers, snub pulley,

Scope of Erection Commission & Fabrication

M24 grade belting

C. Customer's scope of fabrication:

Runway, receiving skirt, discharge hood with chute, walkway and supporting structure.

20 3 V-Plough A. Megacity India scope of supply Suitable for 650 mm wide belt V Plough conveyor, Pneumatically operated, complete with skid plate, discharge chute etc.

21 1 Return sand storage hopper B. Customer's scope of bought-out:

Capacity: 115 m³ UHMWPE liners of 10 mm thick.

Made out of 10 mm thick m.s plate with suitable reinforcement. Inside C. Customer's scope of fabrication: surface is lined with plastic material. Hopper

22 1 Feeder Belt Conveyor A. Megacity India scope of supply:

Located below return sand hopper. Drive mechanism, comprising of geared Flat type motor, rubber lagged head pulley assembly

Width : 800 mm with drive unit mounted on a fabricated frame

Centre to centre distance : 7 m and tail pulley assembly with tensioning

Drive: 5.5 kW device.

Belt speed : 0.5 m/sec

Tensioning arrangement : Screw type

B. Customer's scope of bought-out:

Flat carrying and return idlers, snub pulley, M 24 grade belting along with Proximity switch Zero Speed Monitor, Pull Chord Switch and Junction Box

C. Customer's scope of fabrication:

Runway, receiving skirt, discharge hood and chute and supporting structure.

23 1 New sand storage hopper C. Customer's scope of fabrication:

For storage of new sand. Hopper.

Volume: 16 m³

Made out of 8 mm thick MS plate suitably reinforced.

24 1 Electromagnetic vibratory feeder B. Customer's scope of bought-out:
For feeding new sand to the batch hopper. Electro magnetic vibratory feeder.

Capacity : 15 T/hr
with rectifier unit

25 1 Reversible Feeder Belt Conveyor A. Megacity India scope of supply:
Flat type Drive mechanism, comprising of geared motor Width : 650 mm rubber lagged pulley assemblies provided

Centre to centre distance : 7 m on both ends of the belt conveyor with drive units

Drive: 2 Nos of 5.5 kW each. mounted on fabricated- frames with gravity type

Belt speed : 0.5 m/sec arrangement on one side.

Tensioning arrangement : gravity type

B. Customer's scope of bought-out:

Flat carrying idlers, return idlers, snub pulleys, HR grade rubber belting.

C. Customer's scope of fabrication:

Stringer, skirting, discharge hood with chute and the supporting structure.

26 1 Monorail hoist B. Customer's scope of bought-out:

For lifting additives. Electric hoist

Hoist capacity: 1 ton, wire rope type

Lift : 20.0 m, with manual push-pull C. Customer's scope of fabrication:

trolley. Monorail with supporting structure

27 2 Additive storage hopper C. Customer's scope of fabrication:

For storage of additives like bentonite, Hoppers.
coal dust.

Volume: 4 m³

Made out of 6 mm thick MS plate suitably reinforced.

28 2 Screw Feeder A. MEGACITY INDIA scope of supply:

For feeding metered quantity of Screw feeder additives to the mixer with VFD.

Screw dia. : 135 mm C. Customer's scope of fabrication:

Length : 1.4 m. (approx.) Supporting legs for the screw feeder.

Drive : 1.5 kW

29 1 Additive weigh hopper B. Customer's scope of bought-out:

Scope of Erection Commission & Fabrication

For weighing of additives, made out of Load cell for additive weigh hopper with 3 mm thick plate. The hopper is control and pneumatically operated butterfly mounted on 3 nos load cells and fitted valve.

with pneumatically operated rotary valve. C. Customer's scope of fabrication:

Fabrication of additive weigh hopper.

30 1 Batch hopper for TM190-75 Mixer A. Megacity India scope of supply :

For holding one batch of used sand, Batch hopper for the mixer, TM190-75. new sand and additives.

Mounted on top of the mixer. Made B. Customer's scope of bought-out:

out of m.s plate and is fitted with Load cells pneumatically operated gate.

31 1 Centrifugal Sand Mixer, TM190-75 A. Megacity India scope of supply :

Model : TM190-75 Centrifugal Sand Mixer, TM190-75

Rated batch capacity : approx 1000 kg

C. Customer's scope of fabrication:

Mixer Base frame

32 1 Surge hopper B. Customer's scope of bought-out:

For holding the prepared sand from UHMWPE plastic lining of 10mm thick. the mixer. Made out of 6 mm thick m.s plate with suitable reinforcement.. C. Customer's scope of fabrication:

Inside surface is lined with plastic Surge hopper. material.

33 1 Feeder Belt Conveyor A. Megacity India scope of supply:

Trough type Drive mechanism, comprising of geared

Width : 800 mm motor, rubber lagged head pulley assembly

Centre to centre : 10 m with drive unit mounted on a fabricated frame

Drive: 5.5 kW and tail pulley assembly with tensioning

Belt speed : 1.0 m/sec device.

Tensioning arrangement : Screw type

B. Customer's scope of bought-out:

Flat carrying and return idlers, snub pulley, M 24 grade belting along with Proximity switch

Zero Speed Monitor, Pull Chord Switch

and Junction Box

C. Customer's scope of fabrication:

Runway, receiving skirt, discharge hood and

chute and supporting structure.

34 1 Belt Conveyor A. Megacity India scope of supply:

Trough type Drive mechanism, comprising of geared motor

Width : 800 mm head pulley assembly with drive unit,

Centre to centre : 12 m mounted on a fabricated frame and tail pulley

Drive: 5.5 kW assembly with tensioning device.

Belt speed : 1.0 m/sec

Tensioning arrangement : Screw type

B. Customer's scope of bought-out:

Flat carrying and return idlers, snub pulley, M 24 grade belting along with Proximity switch

Zero Speed Monitor, Pull Chord Switch and Junction Box

C. Customer's scope of fabrication:

Runway, receiving skirt, discharge hood with chute, walkway and supporting structure.

35 1 Belt Conveyor A. Megacity India scope of supply:

Trough type Drive mechanism, comprising of geared motor

Width : 800 mm head pulley assembly with drive unit,

Centre to centre : 12 m mounted on a fabricated frame and tail pulley

Drive: 5.5 kW assembly with tensioning device.

Belt speed : 1.0 m/sec

Tensioning arrangement : Screw type

B. Customer's scope of bought-out:

Flat carrying and return idlers, snub pulley, M 24 grade belting along with Proximity switch Zero Speed Monitor, Pull Chord Switch and Junction Box

C. Customer's scope of fabrication:

Scope of Erection Commission & Fabrication

Runway, receiving skirt, discharge hood with chute, walkway and supporting structure.

36 1 Inline Aerator A. Megacity India scope of supply:

Suitable for 800 mm Belt Width Inline Aerator

37 1 Belt Conveyor A. Megacity India scope of supply:

Trough type Drive mechanism, comprising of geared motor

Width : 800 mm head pulley assembly with drive unit,

Centre to centre : 20 m mounted on a fabricated frame and tail pulley

Drive: 5.5 kW assembly with tensioning device.

Belt speed : 1.0 m/sec

Tensioning arrangement : Screw type

B. Customer's scope of bought-out:

Flat carrying and return idlers, snub pulley, M 24 grade belting along with Proximity switch Zero Speed Monitor, Pull Chord Switch and Junction Box

C. Customer's scope of fabrication:

Runway, receiving skirt, discharge hood with chute, walkway and supporting structure.

38 2 V-Plough A. Megacity India scope of supply

Suitable for 650 mm wide belt V Plough

conveyor, Pneumatically operated,

complete with skid plate, discharge

chute etc.

39 2 Prepared Sand Storage hopper B. Customer's scope of bought-out:

For storage of prepared sand UHMWPE plastic lining of 10mm thick .

Capacity: 4 t

Made out of 6 mm thick MS plate C. Customer's scope of fabrication:

suitably reinforced and inside lined with Storage Hopper.

plastic material

40 2 Feeder Belt Conveyor A. Megacity India scope of supply:

Flat type Drive mechanism, comprising of geared

Width : 650 mm motor, rubber lagged head pulley assembly

Centre to centre distance : 4 m with drive unit mounted on a fabricated frame

Drive: 3.7 kW and tail pulley assembly with tensioning

Belt speed : 0.5 m/sec device.

Tensioning arrangement : Screw type

B. Customer's scope of bought-out:

Flat carrying and return idlers, snub pulley,

M 24 grade belting along with Proximity switch Zero Speed Monitor, Pull Chord Switch and Junction Box

C. Customer's scope of fabrication:

Runway, receiving skirt, discharge hood and chute and supporting structure.

41 Bulk Supporting Structure C. Customer's scope of fabrication:

For storage hoppers, platforms at Supporting structure various levels, platform for sand mixer including hand rails, stair cases etc.

42 1 Electrical control panel A. Megacity India scope of supply:

PLC based electrical control panel for Electrical Control Panel for Sand plant the sand plant. Panel will be a free standing, floor mounted, panel box, B. Customer's scope of bought-out: painted to RAL 7035 colour Power and control cable, cable laying from complete with required starters with control panel to respective drive along with the state of the art motor circuit cable tray. breaker for each drive of sand plant.

Mould Handling System- ARPA 900 (Semi Automatic)**43 2 ARPA 900 moulding machines** A. Megacity India scope of supply:**Scope of Erection Commission & Fabrication**

Simultaneous jolt squeeze moulding ARPA 900 Moulding machines with PLC Based machines. contorls and one set of Tool kit for 2 machines.

44 88 Pallet car B. Customer's scope

Pallet Size: approx. Pallet Cars Complete

45 3 Transfer car (Motorized) A. Megacity India scope of supply:

Suitable for the above pallet car Transfer car (Motorised)

Fabricated chassis fitted with rail track

on top and mounted on four wheels. It B. Customer's scope of trade bought-out: is driven by geared motor with brake Cable drag chain, stoppers, track, etc., through cable drag chain system.

46 Lot Track for pallet and transfer car C. Customer's scope of fabrication:

Made out of 50 lb/yd rail section Track system.

supported on sleepers of m.s channel section, fixed with clamps.

47 3 Hydraulic Push & Brake Cylinder A. Megacity India scope of supply:

Hydraulic Push & Brake Cylinder

47A 1 Hydraulic Push & Brake Cylinder A. Megacity India scope of supply:

for Return Line. Hydraulic Push & Brake Cylinder

48 1 Hydraulic power pack A. Megacity India scope of supply:

Complete with oil tank, pump, drive Hydraulic power pack pressure gauge, relief valve, solenoid

operated D.C. valve to operate B. Customer's scope of trade bought-out:

hydraulic cylinder one at time. Pipe laying from power pack to Push & Brake unit.

49 1 Electrical control panel A. Megacity India scope of supply:

PLC based control panel for the mould Electrical control panel handling system. Free standing floor

mounted panel box, painted to RAL B. Customer scope of trade bought out

7035, complete with starters & state Cable laying with junction boxes, Limit/Proxiof the art motor circuit breaker for mity switches etc.

50 4 Bi-rail Hoist B. Customer scope of trade bought out

Provided above molding machine: Bi-rail Hoist

1000 kg pneumatic hoist, having 4.0 m lift mounted on a manually push-pull C. Customer's scope of fabrication: trolley traveling on bi-rail trolley. Supporting structure for the bi-rail hoist.

51 1 Monorail with Hoist B. Customer scope of trade bought out

Provided above shake out Hoist Hoist capacity 3 t, wire rope, classIV duty, lift 5.0 m (appx) with powerised C. Customer's scope of fabrication:

trolley, cable, operating push button Monorail with Supporting structure

etc. Monorail made out of m.s. beam section.

For II ARPA 900 Moulding line

55 1 Shake-out A. MEGACITY INDIA scope of supply:

Model : RVA 1.5 x 2.0- 3 Shake-out complete.

Capacity : 3 t

Grid size : 1500 x 2000 mm C. Customer's scope of fabrication:

Made out of MS flat sections. Supporting structure.

Supported on 6 nos. of heavy duty springs and driven by 2 nos. of vibro motors

56 1 Grid with Chute below shake out C. Customer's scope of fabrication:

Made out of 6 mm thick plate Grid with Chute below shake out

suitably reinforcement.

57 1 Oscillating Conveyor A. Megacity India scope of supply:

To be located below the shake-out Oscillating conveyor to take care of the surge load.

Model : FVE 0.6 x 3.3 C. Customer's scope of fabrication:

Trough size : 600 mm wide x Supporting structure for the above.

3300 mm long.

Driven by 2 nos. vibro motors

58 1 Belt Conveyor A. Megacity India scope of supply:

Trough type Drive mechanism, comprising of geared motor

Scope of Erection Commission & Fabrication

Width : 650 mm head pulley assembly with drive unit,

Centre to centre : 26 m mounted on a fabricated frame and tail pulley

Drive: 7.5 kW assembly with tensioning device.

Belt speed : 1.0 m/sec

Tensioning arrangement : Screw type B. Customer's scope of bought-out:

Flat carrying and return idlers, snub pulley,

HR grade belting along with Proximity switch

Zero Speed Monitor, Pull Chord Switch

and Junction Box

C. Customer's scope of fabrication:

Runway, receiving skirt, discharge hood with

chute, walkway and supporting structure.

59 1 Over band magnetic separator B. Customer's scope of bought-out:

For removing the iron particles from the Over band magnetic separator.

return sand system. Air cooled,

permanent magnetic type. Suitable for C. Customer's scope of fabrication:

650 mm wide belt conveyor, operating Supporting structure for OBMS.

height 150-175 mm

60 lot Spillage grid with chute C. Customer's scope of fabrication:

To take care of spill sand near Spillage Grid with chute

moulding machine The grid is

made out of m.s flat and made

out of 3 mm thick plate with

suitably reinforced

61 1 Spillage Belt Conveyor A. Megacity India scope of supply:

Trough type Drive mechanism, comprising of geared motor

Width : 500 mm head pulley assembly with drive unit,

Centre to centre : 10 m mounted on a fabricated frame and tail pulley

Drive: 3.7 kW assembly with tensioning device.

Belt speed : 1.0 m/sec

Tensioning arrangement : Screw type B. Customer's scope of bought-out:

Flat carrying and return idlers, snub pulley,

M 24 grade belting along with Proximity switch

Zero Speed Monitor, Pull Chord Switch

and Junction Box

C. Customer's scope of fabrication:

Runway, receiving skirt, discharge hood with

chute, walkway and supporting structure.

62 2 V-Plough A. Megacity India scope of supply

Suitable for 650 mm wide belt V Plough

conveyor, Pneumatically operated, complete with skid plate, discharge chute etc.

63 2 Prepared Sand Storage hopper B. Customer's scope of bought-out:

For storage of prepared sand UHMWPE plastic lining of 10mm thick .

Capacity: 4 t

Made out of 6 mm thick MS plate C. Customer's scope of fabrication: suitably reinforced and inside lined with Storage Hopper.

plastic material

64 2 Feeder Belt Conveyor A. Megacity India scope of supply:

Flat type Drive mechanism, comprising of geared

Width : 650 mm motor, rubber lagged head pulley assembly

Centre to centre distance : 4 m with drive unit mounted on a fabricated frame

Drive: 3.7 kW and tail pulley assembly with tensioning

Belt speed : 0.5 m/sec device.

Tensioning arrangement : Screw type

B. Customer's scope of bought-out:

Flat carrying idlers, return idlers, snub pulley,

M24 rubber belting.

C. Customer's scope of fabrication:

Scope of Erection Commission & Fabrication

Runway, receiving skirt, discharge hood and chute and supporting structure.

Mould Handling System- ARPA 900 (Semi Auto matic)

65 2 ARPA 900 moulding machines A. Megacity India scope of supply:

Simultaneous jolt squeeze moulding ARPA 900 moulding machines with PLC Based machines. Controls and one set of Toolkit

66 71 Pallet car B. Customer's scope

Pallet car

Note:- Final size will be decided based on

Mould box drawing.

67 3 Transfer car (Motorised) A. Megacity India scope of supply:

Suitable for the above pallet car Transfer car (Motorised)

Fabricated chassis fitted with rail track

on top and mounted on four wheels. It B. Customer's scope of trade bought-out:

is driven by geared motor with brake Cable drag chain, stoppers, track, etc., through cable drag chain system.

68 Lot Track for pallet and transfer car C. Customer's scope of fabrication:

Made out of 50 lb/yd rail section Track system.

supported on sleepers of m.s channel section, fixed with clamps.

69 3 Hydraulic Push & Brake Cylinder A. Megacity India scope of supply:

Hydraulic Push & Brake Cylinder

69A 1 Hydraulic Push & Brake Cylinder A. Megacity India scope of supply:

Hydraulic Push & Brake Cylinder

70 1 Hydraulic power pack A. Megacity India scope of supply:

Complete with oil tank, pump, drive Hydraulic power pack

pressure gauge, relief valve, solenoid

operated D.C. valve to operate B. Customer's scope of trade bought-out:

hydraulic cylinder one at time. Pipe laying from power pack to Push & Brake unit.

71 1 Electrical control panel A. Megacity India scope of supply:

PLC based control panel for the mould Electrical control panel

handling system. Free standing floor

mounted panel box, painted to RAL B. Customer scope of trade bought out

7035, complete with starters & state Cable laying with junction boxes, Limit/Proxiof

the art motor circuit breaker for mity switches etc.

each drive.

72 4 Bi-rail Hoist B. Customer scope of trade bought out

Provided above molding machine: Bi-rail Hoist

1000kg pneumatic hoist, having 4.0 m

lift mounted on a manually push-pull C. Customer's scope of fabrication:

trolley traveling on bi-rail trolley. Supporting structure for the bi-rail hoist.

73 1 Monorail with Hoist B. Customer scope of trade bought out

Provided above shake out Hoist Hoist

capacity 3 t, wire rope, classIV duty,

lift 5.0 m (appx) with powerised C. Customer's scope of fabrication:

trolley, cable, operating push button Monorail with Supporting structure

etc. Monorail made out of m.s. beam section.

LIST OF PLANT AND MACHINERIES TO BE INSTALL AND ERECTION

SL. NO.	ITEM	MAKE	Nos / set	CAPACITY
SUGGESTIVE LIST OF PLANT AND MACHINERY MINIMUM REQUIREMENTS				
	DUCTILE IRON UNIT			
	MELTING AREA			
	Induction Furnace (Suggested to buy W type 1000kgsx1500kw with three crucibles)	Inductotherm. USA.	3 NOS	1 Ton
	Hydraulic Pipe Line			specs by inductotherm
	WATER DISTRIBUTION			
	Cooling Tower	Southern Cooling/ Paharpur		specs by inductotherm
	RO PLANT	METCON		specs by inductotherm
	Mono Block Centrifugal Pump	Kirloskar		"
	Mono Block Centrifugal Pump	Kirloskar		"
	Mono Block Centrifugal Pump	Kirloskar		"
	Mono Block Centrifugal Pump	Kirloskar		"
	Mono Block Centrifugal Pump	Kirloskar		"
	Mono Block Centrifugal Pump	Kirloskar		"
	Mono Block Centrifugal Pump	Kirloskar		"
	Water Pipe, Fittings, Labour		LS	"
	Soft Water Plant			"
	SAND PLANT AREA			
	Knock Out	DISA. UK.	2	1500 Kgs
	Vibratory feeder below shakes out.	DISA. UK.	2	15 TPH
	Belt Conveyor	DISA. UK.	1	
	Over Band Magnetic Separator	DISA. UK.	1	
	Magnetic Pulley	DISA. UK.	1	
	Polygonal Screen with suction blower and bag filter	DISA. UK.	1	
	Return Sand Storage Hopper	DISA. UK.	1	100 tons
	Feeder Belt Conveyor(BC:2) below Storage hopper.	DISA. UK.	1	
	Screw feeder for control feeding of Bentonite & coaldust with 0.5M3 hopper, in the batch hopper of P-500.	DISA. UK.	2	

	PLC based Control panel for the sand plant of above equipment with mimic diagram.	DISA. UK.	2	
	Intensive Mixture including water pump & gauge, PLC Controlled Control Panel, Water Meter and Solonoid Valve for water line (Preferable with Cooling System and Sand Controller of Rhino)	DISA. UK.	1	Min 500 kgs Batch
	Distribution Belt Conveyor (BC3)	DISA. UK.	1	
	Vee Plough and Straight Plough on Distribution Belt	DISA. UK.	5	
	Hoppers Above Molding machines	DISA. UK.	4	
	Feeder Belts Above Molding Machines	DISA. UK.	4	
	Core Sand Mixer 45kgs	DISA. UK.	1	45 Kg/Batch
	Core Oven	Testing Instrument	1 NOS	350 Dgree C
	Water Tank	Patton Make	1	
	MOLDING MACHINES			
	ARPA 900 MACHINE FOR BOX SIZE 1000X1000	DISA. UK.	2 PAIRS	
	MOULD & MOULD HANDLING SYSTEM			
	Mould Boxes for ARPA 900 size 1000x1000x200/250	Yashi Foundry Tools	200 sets	Design by YFT
	Pallet Cars for ARPA 900 Boxes	Yashi Foundry Tools	200 sets	Design by YFT
	Closing Pins for Boxes	Yashi Foundry Tools	200 sets	Design by YFT
	Cast Iron Clamps for Boxes	Yashi Foundry Tools	200 sets	Design by YFT
	Cast Iron Match Plates for Arpa 900 machine	Yashi Foundry Tools	100 sets	Design by YFT
	Match Plate Pins	Yashi Foundry Tools	100 sets	Design by YFT
	Extra Bush for Molding boxes and Match Plate Pins	Yashi Foundry Tools	100 sets	Design by YFT
	Track for Handling Moulds	Yashi Foundry Tools	600 Mtrs	Design by Rhino
	Electrically Operated Transfer car with AC Drive, Gear box, metallic cable drag chain and special duty trailing cable.	DISA. UK.	6 Nos	
	Hydraulic Line Pullers with fixed frame, travelling guide, guide roller etc.	DISA. UK.	8 nos	
	Hydraulic Power Pack for puller with hydraulic piping, fittings, and field piping of the same	DISA. UK.	2 Nos	
	Electrical control panel with PLC Siemens S7-200 + Text Display for both mould handling line complete with sensors, wiring at site.	DISA. UK.	2 Nos	

	Wire rope Electric Hoist for handling Boxes on ARPA 900 Machine	JASO, SPAIN	8 nos	1.0 M/T capacity, with height of lift = 4 met.
	Wire rope Electric Hoist for Handling Boxes over Knock Out	JASO, SPAIN	2 Nos	1 M/T capacity, complete with motorizes trolley with height of lift = 7 met
	Wire rope Electric Hoist for Pouring Hot Metal in Boxes	JASO, SPAIN	8 Nos	of 2.0 M/T capacity, complete with motorised trolley with height of lift = 7.5 met
	Bi rail for Mould Box handling above Molding Machine	DISA. UK.	8 Nos	
	Bi rail with Push Pull Trolley for Pouring System	DISA. UK.	4 Nos	
	Pollution Control Side			
	ID Fan	Polestar	1NO	As per design by Shri BKR
	Motor For ID Fan	KIRLOSKAR MAKE	1 NO	
	Dry Cyclone	Fabricated		
	Wet Scrubber	Fabricated		
	Swing Hood, Swing Device, Duct Line, Butterfly Valve, Increase height of Chimney	Fabricated		
	AIR COMRESSOR			
	Air Compressor Model : GA 55 A 10 Pack	Atlas Copco	2	350 cfm/10Kgs
	Air Receivers		2	2000 Kgs
	Air Receivers		1	3000 Kgs
	Pneumatic Rammer	Chicago Pneumatic	16 Nos	800 Blows/Min.
	Compressed Air Line		LS	
	CRANE LINE			
	E.O.T. Crane	JASO, SPAIN	2 NOS	5 Ton
	CRANE LINE		LS	

	ELECTRICAL INSTALLATION			
	Transformer (Furnace)/VCB	Truvolt	01 NOS	Specs by Inductotherm
	VCB HT Input	Truvolt	3 nos	Design by Truvolt
	150mm ² XLPE HT Cable		mtr	
	240 Sq mm x 1 Core industrial Cu Flexible Cable 1.1 KV Grade		MTR	
	Hume Pipe 4"		pcs	
	CABLE PAYING COST		LS	
	WBSEB Expences		LS	
	B.S. ENGINEERS		LS	
	MISC. ELECTRICAL PURCHASES			
	Transformer & VCB Room CIVIL JOBS			
	LABORATORY EQUIPMENT			
	PHYSICAL TESTING			
	UTS Machine	Krystal Elmec	1 no	200 KN
	BHN Machine	Krystal Elmec	1 no	3000 Kgf
	Micro Sample Polishing Machine	Vardhan Works	1 NO	
	Microscope	Vardhan Works	1 no	
	Moisture Testing Apparatus,	Kelson		
	Green Compressible Strength Tester,	Kelson		
	Mould Hardness Tester,	Kelson		
	Sand Drier	Kelson		
	Portable Hardness Tester	Kelson		
	Standard Rammer for Sand Test	Kelson		
	Energy Meter		1 No	
	CHEMICAL TESTING			
	Chemical Balance with Weight Box,	Ice Ray		
	Sieve Shaker with 11 no. sieves	Testing Instrument		
	Barometer,			
	Muffle Furnace,	Testing Instrument		
	Heater			
	Hot Plate	Testing Instrument		
	Wall Thermometer,	Testing Instrument		
	Strohlein Apparatus with Tube Furnace	Testing Instrument		

	CE Analyzer	Suyash		
	UTILITIES			
	Ladle	Industrial Enterprise	6 NOS	500 Kg
	Ladle	Industrial Enterprise	2 NOS	1 Ton
	Ladle	Wesman	1 NO	1 Ton
	Lip Type Pouring Ladle	DISA. UK.	8 nos	500 kgs batch
	Ladle Preheater with adjustable height	DISA. UK.	1 Nos	1000 Kgs
	Table Grinder	Patak	1 NO	8 Inch
	Energy Meter	Inductotherm	1 nos	On panel
	Weighing Scale	Asian Scale	1	1 M/t.
	Shot blasting machine. Model:- vp-14	DISA U.A.E.	1	1 M/t.
	Hot Metal Weighing Scale			
	MACHINE SHOP			
	Shaper Machine	Pathak Indus.	5 NO	
	Milling Machine	Huron	2 NO	
	Lathe Machine	Pathak Indus.	4 NOS	
	Drill Machine	Pathak Indus.	4 NOS	
	MISCLLENOUS			
	Shrink Wrap Machine/Tensioner	Shree Raj International	1 No each	
	MIG type Welding Machine	Rubber & Chemicals	1 Set	
	Mould Boxes & Patterns			
	Mould Boxes for Hand Molding	Yashi Foundry Tools	LS	
	Patterns		LS	
	GRINDING MACHINE			
	Angle Grinder 230 mm	KPT Sales & Services Ltd.	10	
	Angle Grinder 230 mm	KPT Sales & Services Ltd.	6	
	Angle Grinding Machine	Kraft Sales & Services (U.A.E.) Limited	6	9"
	Angle Grinder 230 mm	Kraft Sales & Services (U.A.E.) Limited	5	
	Angle Grinder 230 mm	Kraft Sales & Services (U.A.E.) Limited	4	
	Angle Grinder 230 mm/125mm	Kraft Sales & Services	4 No each	7"

		(U.A.E.) Limited		
	Angle Grinder 125mm	Kraft Sales & Services (U.A.E.) Limited	4 nos	5"
	Pencil Grinding Machine	KPT		
	Flexible Grinding Machine	KPT		
	Office Equipment's			
	Furniture & Fixtures		LS	
	Air Conditioner		LS	
	Computers and Computer software		LS	
	Office Equipment's		LS	
	Factory Electrifications			
	Electrification of Factory Shed, Building, Roads, including Fittings, Cable, Wire, Switches, Starters Etc.		LS	

PLANT AND MACHINERY – MELTING

Sl. No.	Major Heads for cost allocation	Specifications / Particulars / Model / Description	Quantity
1	Immersion Pyrometer		2
2	Carbon - Silicon Analyser		1
3	500 kg Digital Weighing Scale	Platform Type for weighing charges	2
4	25 kg Digital Weighing Scale	Pan Type for weighing Ferro-Alloys	2
5	Ladle Pre-Heater	LDO operated	1
6	Induction Melting Furnace	750 Kg x 750 kw, Coreless Medium Frequency(500 Hz), Dual Mode with 1150 kw x 750 V Converter with 750 kw Inverter and 3 Nos. Crucible	2
7	Mono Rail for Pouring Ladle Track	Load carrying capacity - 3.00 Ton	2
8	Pouring Ladle Handler	Load Carrying Capacity - 3.00 Ton	4
9	Crane Suspended Pouring Ladle	Lip Pouring, Capacity 350 kg	6
10	Crane Suspended Magnesium Treatment Rotary Ladle for Pure Mag. Treatment.	Capacity - 1.00 Ton	3

PLANT AND MACHINERY - SAND PLANT

Sl. No.	Major Heads for cost allocation	Specifications / Particulars / Model / Description	Quantity
0	Return Sand Cooler	capacity 40 ton/hr.	0
1a	- do -	In-house fabrication	1
2a	- do -	In-house fabrication	1
4	Shakeout - ARPA 900 TK 14816900	Shakeout - ARPA 900 - 3 ton	2
4a	- do -	In-house fabrication	2
5	Grid around and Chute below Shakeout - APRA 900	Grid around and Chute below Shakeout - APRA 900	2
5a	- do -	In-house fabrication	1
6	Oscillating Conveyor - ARPA 900	To be located below Shakeout to take care of the surge load. Trough size 600 wide x 3300 long	1
7	Return Sand Belt Conveyor	650 mm wide x 26 m c/c with Tensioning Device	1
7a	- do -	Trade boughtout	2
7b	- do -	In-house fabrication	1.66
8	Over Band Magnetic Separator	Air cooled, Permanent Magnetic Type, to suit 650 mm wide Conveyor Belt, Operating Height 200 mm.	2
8a	- do -	Trade boughtout	2
9	Spillage Grid with Chute - ARPA 450	To take care of spill sand near Moulding Machine. In-house MS Fabrication. 2 Ton / Line.	2
9a	- do -	In-house fabrication	1
10	Spillage Belt Conveyor - ARPA 450	Trough type, 500 mm Wide x 16 m c/c.	1
10a	- do -	Trade boughtout	1
10b	- do -	In-house fabrication	0.6
11	Spillage Grid with Chute - ARPA 900	To take care of spill sand near Moulding Machine. In-house MS Fabrication. 2 Ton / Line.	1
11a	- do -	In-house fabrication	1
12	Spillage Belt Conveyor - ARPA 900	Trough type, 500 mm Wide x 16 m c/c.	1

12a	- do -	Trade boughtout	1
12b	- do -	In-house fabrication	1.2
13	New Sand Grid with Chute	New Sand Grid with Chute	2
13a	- do -	In-house fabrication	2
14	Bucket Elevator	Capacity 40 m ³ /Hr. Casing Size 1200 x 550, C/C 18 m, Bucket FRP - 6 litres cap. Belting 800/SED, 450 mm wide, M 24 Grade, 2 mm top and 2 mm Bottom cover.	1
14a	- do -	In-house fabrication	2.5
15	Polygonal Screen	Capacity - 40 M ³ / Hr.	1
16	Discard and Oversize Chute	In-house fabrication, 1.0 Ton approx.	1
16a	- do -	In-house fabrication	1
17	Belt Conveyor	Trough type, 650 mm width, C/C 20 m. Drive mechanism comprising of Geared Motor Head Pulley assembly with Drive Unit.	1
17a	- do -	Trade boughtout	1
17b	- do -	In-house fabrication	1.35
<u>18</u>	V - Plough	Suitable for 650 mm wide belt conveyor, Pneumatically operated complete with Skid Plate, Discharge Chute, etc.	3
19	Return Sand Storage Hopper	Capacity - 80 M ³ . In-house fabrication from 10 mm thk. MS Plate, suitably re-inforced. Inside surface lined with plastic material.	1
19a	<u>- do -</u>	Trade boughtout	1
19b	- do -	In-house fabrication	13.5
20	Feeder Belt Conveyor	Located below Return Sand Hopper, Flat type, 800 mm wide, C/C 10 M with Drive mechanism	1
20a	- do -	Trade boughtout	1
20b	- do -	In-house fabrication	1.5
21	New Sand Storage Hopper	Volume 16 M ³ . In-house fabricated from 8 mm MS Plate.	1

21a	- do -	In-house fabrication	3.2
22	Electromagnetic Vibratory Feeder	For feeding new sand to the Batch Hopper, capacity 15 T / Hr., with Rectifier Unit.	1
22a	- do -	Trade boughtout	1
23	Mono Rail with Hoist	For lifting Additives, capacity - 1 Ton wire rope type. Lift 20 M with manual Push / Pull Trolley.	1
23a	- do -	Trade boughtout	1
23b	- do -	In-house fabrication	1.5
24	Additive Storage Hopper	For storing Bentonitr & Coal Dust. Volume - 4 M ³ . In-house fabrication from 6 mm MS Plate suitably re-inforced.	2
24a	- do -	In-house fabrication	1.5
25	Screw Feeder	For feeding metered quantity of additives to the Mixer with VFD. Screw Dia 135 mm, Length 1.4 M (approx).	2
26	Additives weigh Hopper	Made out of 5 mm thk. Plate. The hopper is mounted on 3 Nos. load cells and fitted with pneumatically operated Rotary Valve.	1
26a	- do -	Trade boughtout	1
27	Rev. Belt Conveyor	Flat type, belt width 650 mm, c/c 2 m	1
27a	- do -	Trade boughtout	1
27b	- do -	In-house fabrication	0.15
28	Batch Hopper for TM-160-45 Centrifugal Sand Mixer	Trade bought out	1
29	Centrifugal Sand Mixer , TM 190 - 75	With Instrument Panel and Fluid Coupling	1
30	Surge Hopper	For holding the prepared sand from Mixer. In-house fabrication, mde out of 6 mm thk. MS Plate with suitable re-enforcement. Inside surface lined with plastic material.	1
30a	- do -	Trade boughtout	1
30b	- do -	In-house fabrication	0.75

31	Feeder Belt Conveyor	Flat type, 650 mm wide, c/c 5 m. Drive mechanism comprising of geared motor, rubber lagged head pulley assy. With drive unit mounted on fabricated frame.	1
31a	- do -	Trade boughtout	1
31b	<u>- do -</u>	<u>In-house fabrication</u>	<u>0.5</u>
32	Belt conveyor	Trough type, 650 mm wide, c/c 29 M with drive mechanism.	1
32a	- do -	Trade boughtout	1
32b	- do -	In-house fabrication	2.5
33	Inline Sand Aerator	Suitable for 650 mm wide Belt with conveyor drive. Skirting provided throughout the length.	1
36	V - Plough, one for ARPA 900, one for Discard	Suitable for 650 mm wide Belt Conveyor, Pneumatically operated complete with Skid Plate, Discharge Chute, etc.	2
36a	- do -	Trade boughtout	0
36b	- do -	In-house fabrication	0
37	Prepared Sand Storage Hopper - ARPA 900. In-House Fab.	In-house fabrication: Capacity - 4 Ton. Made of 6 mm thk. MS Plate, suitably re-enforced, inside lined with plastic material.	2
37a	- do -	Trade Bought out	2
37b	- do -	In-house fabrication	1.5
38	Feeder Belt Conveyor, Flat type, 650 mm wide, c/c 5 m. FB-38, FB-38A TK 755038000 TK 755038500	Drive mechanism comprising of geared motor, rubber lagged head pulley assy. With drive unit mounted on fabricated frame and tail pulley with tensioning device.	2
38 a	Trade bought-out	Conveyor Belt	2
38 b	In-house fabrication	M.S. Fabrication	1
39	Supporting Structure	Bulk estimate. In house fabrication	60
40	Electrical Control Panel	Common Control Panel consisting of PLC based electrical panel for the Sand Plant. Panel will be free standing, floor mounted.	1
40 a	Electrical cash purchase at Customer end.	Plus Bought out items like, Power & Control Cables, Cable laying from central panel to respective drives, Field installation material like Junction Box, Pull Chord Switches, zero	1

		speed monitors, level sensors, etc.	
40 b	In-house Fabrication	M. S. Fabrication	0
	Section Total :		
	Allocation : MFA Utilities	Total of Trade Boughtout + In-house Fabrication :	120 M.T.
	Allocation : PM Sand Plant	Total of DISA Supply	

PLANT & MACHINERY – FETTLING

SL. No.	Particulars / Model / Description	Qty.	Unit
1	Snagging Grinder: Double Ended Pedestal Grinder, C.I. Body with Motor Drive fitted with Resinoid Bond Wheels, Adjustable Job Rest complete with Safety Covers and Dust Suction off-take. Wheel Size : 600 x 50 x 50.8	1	No.
2	Sangging Grinder: Double Ended Pedestal Grinder, C.I. Body with Motor Drive fitted with Resinoid Bond Wheels, Adjustable Job Rest complete with Safety Covers and Dust Suction Off-take. Wheel Size : 450 x 50 x 50.8	1	No.
3	Pnumatic Inagte Breaker	1	No.
4	Pnumatic Runner Breaker	1	No.
5	Heavy Duty Electric Hand Grinder - 240 V x 2000 W	4	No.
6	Heavy Duty Electric Angle Grinder - 240 V x 2000 W	4	No.
7	Shot Blasting M/c. with Cassette Filter	1	No.
8	Electric Control Panel	1	No.
9	In-house Fabrication, Ducting, Chimney, Dust Collector, etc.	5	M/T

PLANT & MACHINERY (PM) - MACHINE SHOP

Sl. No.	Particulars / Model / Description	Qty.	Unit
1	Heavy Duty Centre Lathe, Gap Bed type, Length of 16 ft., Width of Bed 22", Ht. of Centre 20" with 24" 4-Jaw Independent Chuck, Coolant Pump with electrical drive, Tank, Main Drive Motor, Swatches	0	No.
2	Heavy Duty Centre Lathe, Gap Bed type, Length of Bed 12 ft., Width of Bed 20", Ht. of Centre 18" with 20" - 4 Jaw Independent Chuck, Coolant Pump with Electrical Drive, Tank, Main Drive Motor, Swatches	0	
3	Heavy duty all geared Radial Drilling Machine, duly fitted with electrical Coolant Pump and Drive, Tank, Electric Panel Board for centralised operation, with Std. Accessories like C.I. Box Table, Reversible Switch and internal electric wiring, capacity in Steel 50 mm, 9 speeds & 3 Nos. Auto-feed Spindles, Arm Radius 1100 mm, duly fitted with all Motors and Switches.	1	
4	Pillar Drill - capacity 20 mm on steel with Motor, Starter, V - Belts	1	
5	High precision, heavy duty Centre Lathe M/c., head stock fitted with taper roller bearings, machine bed flame hardened & ground, Admit between Centres 1000 mm, Bed width 325 mm, Centre height 254 mm, with 14" dia 4- Independent Jaw Chuck complete with complete with electric drive motor, starter, reversible switch, V-belts, coolant pump assembly with electric drive, steady rest, follow rest, face plate.	1	
6	Shaping Machine - 750 mm stroke length, complete with electric drive, starter, Lubrication Pump.	2	
7	Power Hacksaw, Heavy duty, Hydraulically controlled fitted with mechanical coolant pump, complete with std. accessories like vice, v-belts, motor, starter, etc. to cut 10" round / 8" square.	1	
8	Tool Grinder - 200 x 25 x 16 mm Double Ended,	1	
9	Band Saw M/c.- Multi Speed for Wood & Metal cutting	0	
10	Vertical Milling M/c., all geared, heavy duty, having Longitudinal, Cross & Vertical movement of the table automatic with rapid traverse in all three directions, duly fitted with 1 No. each electric motor for drive of spindle & auto feeds respectively, Electrical Board with Pendant Control for centralized operations, electric coolant pump complete with motor, built in tank and fittings, std. accessories. Table Size 1600 mm x 350 mm fitted with suitable motors for spindle drive and for feeds along with 6" Centre Dividing Head, 8" Jaw size Swivel Base Precision Milling Vice, 15" dia Rotary Table with Indexing Device.	0	

MISC. FIXED ASSETS (MFA) – UTILITIES

Sl. No.	Particulars / Model / Description	Qty.	Unit
	Sand Plant - Trade Boughtout + In-house Fabrication. For detail, refer to PM - Sand Plant	1	Lot
1	5 tones Electric Overhead Travelling Crane	1	No.
2	3.0 Ton Digital Crane suspended Weighing Scale with Accessories	1	No.
3	Immersion Pyrometer	2	No.
4	300 kg Digital Weighing Scale for Charging Material	2	No.
5	0 - 25 kg Pan type Digital Weighing Scale for Ferro Alloys	2	No.
6	Fork Lift - capacity 2 Ton	1	No.
7	Bore Well, 100 mm x 200 mm	1	No.
7A	Bore Well, 50 mm x 150 mm	1	No.
8	Overhead Water Storage Tank	10	ton
9	Water Line Distribution (Lot)	1	No.
10	Cooling Tower for cooling Furnace Coil cooling water	1	No.
11	Pipes, Valves & Fittings for Induction Furnace (Lot)	1	No.
12	DM / R.O. Plant for Ind. Fce. Cooling water (Lot)	1	No.
13	Mono Block Pumps for Induction Furnace (Lot)	6	No.
14	Electric Arc Welding Set with Cable, Accessories (set)	2	No.
15	Oxy-Acetylene Set complete either Cutter & Hose (Set)	2	No.
16	Wheel Barrows	24	No.
17	Air Compressor, 305 CFM, 10 Bar, 55 kW (75 HP)	1	No.
18	Compressed Air line distribution (Lot)	1	No.
19	Medical / First Aid (Lot)	1	No.
20	Fire Fighting Equipment (Lot)	1	No.
21	M. S. Support Structures for Bi-Rail Electric Hoists at Shake-out Vibrators, Mould Pouring Lines, Over-head Sand Mixer, Sand Bunkers, Chutes, Conveyor Belt Trough Support, etc., etc.	1.5	M/T
22	Pneumatic Rammers	9	No.
23	Bi-Rail Elec. Chain Hoist, capacity 1000 kg for Mould handling in ARPA 900 Molding Line	6	No.
24	Bi-Rail Elec. Pn Hoist, capacity 2000 kg over Shake-out Vibrator, ARPA 900 Line.	0	No.
25	Bi-Rail Elec. Hoist, capacity 1 Ton for Metal Pouring in ARPA 900 Lines	6	No.
26	M. S. Support Structures - in house fabrication (M/ton)	7.5	No.
27	2000 Ltr Air Receiver for Air Compressor	1	No.
28	2000 Ltr. Air Receiver for Molding M/c. ARPA 900	2	No.
29	1001 Ltr. Air Receiver for Shot Blasting M/c. VP - 14	1	No.
30	Light Commercial Vehicle TATA - S	1	No.
31	Office Car - SCORPIO , Equivalent	1	No.
32	Motor Cycle - Factory use	2	No.

MISC. FIXED ASSETS (MFA) - QUALITY ASSURANCE

Sl. No.	Particulars / Model / Description	Qty.	Unit
1	Chem. Laboratory with all Glass Ware & equipment.(Lot)	1	Lot
2	Sand Testing Equipment (Lot)	1	Lot
3	20 Ton / 20 KN capacity Tensile Testing M/c.	1	No.
4	Brinell Hardness Testing M/c. 3000 kgf, 10 mm Ball	1	No.
5	Inverted Microscope with Computer Imaging System, with Grinding. Polishing Equipment & Consumables.	1	No.
7	Sepero Analytical Instrument :	1	NO.
8	Carbon - Silicon Analyser	2	
9	Load Testing M/c. Hyd. Operated	1	No.

MISC. FIXED ASSETS (MFA) -POLLUTION CONTROL DEVICE

Sl. No.	Particulars / Model / Description	Qty.	Unit
1	Swing Arm Suction Hood with Support Structure	2	No.
2	Flue Duct Line: Dia 500 x 95 mtr long, 12 Nos. 90° Bends, Control Valves.	6.5	M/T
3	Bag Filter House (Reverse Jet Pulse Shaker) complete with Casing, Hopper, Manifold, Solenoid Valves, Cages, Polymer Needle Felt Bags, Venturi, Sensor Controller, etc., without Support Structure.	1	No.
4	Support Structure for Bag Filter House, fabricated in-house, M.S. Construction.	3.5	M/T
5	Induced Draft Fan (M.S. construction) with 37.5 kw Drive Motor & Starter, Spark Arrestor.	1	Set
6	Dia 900 x 30 M high Free Standing Chimney with Sampling Platform, Structure and Stair Case, M.S. Construction	9.5	M/T
7	Foundation for Free Standing Chimney	1	L.S.
8	Civil Work for ID Fan	1	L.S.
9	Civil Work for Under Ground Flue Duct Line - R.C.C. Tunnel with Cover Slab	60	Mtr.

MISC. FIXED ASSETS (MFA) - ELECTRICAL INSTALLATION & BACK-UP

Sl. No.	Particular / Model / Description	Qty.
1	1800 KVA, 33 KV x 750 V Indoor type Furnace Duty Transformer (Included in Sl. 3)	0
2	1000 KVA, 33 V / 433 V Indore type Transformer (Included in Sl. 3)	0
3	33 KV Indoor Substation - Equipment Installation and Commissioning as per specification detail attached	1
4	Construction of 33 KV Substation including swtatutory clearance	1
5	Cost of Line drawing and connection of 33 KV Supply (Lot)	1
6	Cost to be paid to WBSedcl for supply of their Equipment (Lot)	1
7	Diesel Generator 120 KVA	1
8	Distribution Panel at different stations	4
9	Cable, Electric Wire, Starter, Switches, Electrical Fittings, A.C. Machines with Fittings (Lot)	1
10	Factory Shed, Stores, Offices, Street and General Lighting (Lot)	1
33 KV SUB-STATION - MATERIALS for INSTALLATION & COMMISSIONING of EQUIPMENT		
1	M.S. Iron for Structure including DPL / SEP (in M/Ton)	7
2	75x8 GI Flat 500 Mtr. (in m/ton)	2.4
3	75x10 G.I. Flat 30 Mtr (in M/Ton)	1.8
4	Shielding Pole	4
5	G.I. Stay Set	12
6	G.I. earthing Pipe	40
7	G.I. Stay Wire (in Kg)	60
8	G.I. Turn Buckle	12
9	ACSR (Rabbit) - in Mtr.	300
10	ACSR (DOG) - in Mtr.	100
11	22 KV Post Insulator	15
12	11 KV Disc Insulator with hardware fittings	9
13	P. T. Clamp Dog - Dog	6
14	Al. Bus Pipe 1.5" IPS	20
15	Al. Post Support	7

INSTALLATION OF INDUCTION FURNACE 2NO. INCLUDING ERECTION, COMMISSION & TRAIL RUN

Some of our achievements detailed below will give you an idea about our capabilities to serve metal casting industries:

- **First Furnace manufacturer in India to be awarded ISO9001 certification.**
- **First 18500 KW induction melting system supplied at Nasco Ltd. – Saudi Arabia.**
- **4 X 22,000 KW VIP®Power-Trak® with 8 X 50 Ton furnaces for the world’s largest steel melt shop using induction furnaces at BSRM – Bangladesh.**
- **First 8000 KW VIP®Duak-Trak® induction melting system supplied to SEPL – Coimbatore.**
- **India’s first 10,000 KW VIP®Multi-Trak™ power supply system supplied to AIA Engineering – Ahmedabad.**
- **55 Ton Channel-type furnace supplied to Sakthi Auto Components – Coimbatore.**
- **First 40 Ton steel frame furnace supplied to Welspun Steel Ltd. – Anjar.**
- **India’s largest 14,000 KW bar re-heater prior to rolling at Kamachi Power & Steels – Chennai.**
- **India’s largest 6200 KW Twin Line induction billet heater at Bharat Forge Ltd. – Pune.**
- **India’s largest 7500 KW induction long bar heater supplied to Rolex Rings – Rajkot.**
- **India’s largest 1350 KW induction wheel rim heater prior to forming supplied to Wheels India. – Chennai.**
- **India’s first CFI² 200 KW, 400 kHz solid – state induction tube welder installed at Bhushan Steels Ltd. – Chandigarh.**
- **Our largest CFD 1000 KW solid-state dual welder at Maharashtra Seamless – Raigad & Jindal (India) – Howrah for the manufacturer of API line pipes.**
- **First Quad-Trak induction melting system supplied to AIA Ltd.**
- **First automated melt shop with 4000 KW 5 ton steel shell furnace at Brakes India Ltd.**

1500 KW DUAL MODE VIP-R FURNACE SYSTEM		
Sr.	Quantity	Description
1.	One	1500 KW:500Hz, 12 Pulse, DUAL MODE VIP R Power & Control System consisting of :- <ul style="list-style-type: none"> - Power input section - Converter section rated for 1500 KW - Inbuilt DC capacitor in filter section - Two Voltage fed Inverter section rated for 750 KW - Two Inbuilt AC tank capacitor section for 750 KW - Two Control and monitor section - husky copper bus bars - Internal distilled water circulating system - 4 nos furnace selector switches with suitable electrical interlocks - Hydraulic power supply unit - Remote control console
2.	Three	1000 KG DURALINE FURNACE comprising of:- <ul style="list-style-type: none"> - hydraulic tilting arrangement, - set of water cooled leads - one standard set of Interconnecting copper tubing
3.	One	'W' system interconnecting bus tubes to connect middle furnace with both 750 KW Inverters.
4.	Three	Fume rings for fume extraction without ducting
5.	One lot	Spares worth USD 4600
6.	15 Days	Field Service for start-up commissioning
7.	2 sets	Approved Civil water system and foundation drawings.
8.	2 sets	Drawings & Operation Manuals.
AUXILIARIES		
9.	One	1725 KVA Furnace Transformer.
10.	One set	Interconnecting arrangement from Transformer to panel. (Max 9 Meter)
11.	One	FRP Cooling Tower.(Induced draft type)
12.	One set	Raw water, soft water and emergency pump
13.	One	DM Plant.
14.	One	MCC Panel
15.	One	Coil Cooling Heat Exchanger

Delivery will be within 16 to 20 Weeks. Other terms and conditions are as per the enclosed international terms and conditions (Bulletin No. TAC 03).

REF: QEXP11779 - January 05, 2023

TECHNICAL SPECIFICATIONS

1500 KW/500 Hz VIP DUAL- MODE-R-PI

A. APPLICATION REQUIREMENTS

1.	Alloy to be melted	STEEL	IRON
2.	Melt temperature	1650°C	1480°C

B. CHARACTERISTICS OF RECOMMENDED POWER UNIT

1.	Rated Inverter KW	750 KW
2.	Maximum Converter KW	1500 KW
3.	Nominal Furnace Frequency	500 Hz
4.	Line Power Factor	0.97 and above
5.	KVA required at input of VIP Power Trak-R	1645 KVA on load
6.	Melt Rate at 750 KW **	1400 Kg/hour – Steel 1540 Kg/hour – Iron
7.	Power Connection	575V, 6 Phase, 50 Hz

C. CHARACTERISTICS OF RECOMMENDED MELTING FURNACE

1.	Nominal capacity (Steel capacity)	1000 KG
2.	Style of Furnace	DURALINE
3.	Pouring Mechanism	Hydraulic tilt
4.	Furnace Lining (<i>Recommended - to be provided by the customer</i>)	Silica Iron Mgo..... Steel

** The above melt rate is based on a nominal furnace size for second heat when lining is hot, charge is dense and bus runs proper. The voltage should be steady within allowable range. Cooling water should be as per our specification. Melt rates will be for the weight of charge and does not include time for initial charging, pouring, superheating, deslagging or chemical analysis. Please note that slag consumes nearly double the power.

SCOPE OF SUPPLY - PAGE 1

SCOPE OF SUPPLY

A. POWER UNIT

I. ELECTRICAL PANEL



1. CABINET

Metal cabinet, duly painted fitted with panel doors which are gasketed and equipped with locks. In addition, microswitches are provided which illuminate a lamp on the monitor board and shut off power to prevent injury to personnel when the lift off panel or doors are opened.

Power connections are easily made through the top and water connections are through the side of the cabinet.

2. RECTIFIER SECTION WITH FILTER

a) High power SCRs with snubbers for rectification.

This rectifier is designed to minimise line harmonics compared to phase controlled rectifier.

Instantaneous trip circuit facility is provided for the protection of the rectifier.

b) Fast acting semi-conductor fuses.

c) One No. of Air core encapsulated current limiting reactors.

d) DC capacitors located in capacitor section.

This design of converter and filter section reduces losses compared to iron core reactor(s) and helps to provide constant DC voltage to the voltage fed inverter.

This design helps to achieve the conversion efficiency not less than 96%.



SCOPE OF SUPPLY - PAGE 2

3. INVERTER SECTION

- a) This section contains inverter panel containing high power inverter SCRs with snubbers, anti parallel diodes and ACP reactors. This helps to provide full power throughout the melt cycle.



4. CAPACITOR SECTION

- a) This section contains all the required DC filters and medium frequency AC capacitors.
- b) One pressure switch, installed in each capacitor.
- c) One indicating lamp located on the monitor board to notify the operator when the capacitor pressure switch has been actuated.



5. GROUND/METAL LEAK DETECTOR

One sensing ground/metal leak detector ready to sense and indicate any ground and metal leak. Consisting of indicating lamp, milliammeter, probe disconnect switch to disconnect the probe from the power supply.



6. CONTROL AND MONITOR SYSTEM

- a) Three direct reading instruments including frequency meter, kilowatt meter and furnace voltmeter.
- b) One main control board for controlling of the equipment which eliminates electronic complexity and simplifies maintenance. This board is located in a compartment. A cooling fan with heat exchanger is provided for temperature control.
- c) ON/OFF push buttons are provided on the control door.
- d) One power control knob is provided on the control door to set the desired power level.
- e) One circuit monitor for monitoring and indicating functional parameters, such as water pressure, water temperature and other electrical faults.



SCOPE OF SUPPLY - PAGE 4

INDUCTION FURNACE SYSTEM

II. MELTING FURNACE

B. DURALINE FURNACE

Hydraulically tilted coreless melting furnace for housing and providing rigid support to the induction coil. Constructed out of cast aluminium alloy side plates, top and bottom made out of refractory with stainless steel fibre reinforcement. This coreless Duraline without shunts design helps in reducing energy loss.



Included in each furnace will be:

1. A set of shrouded hydraulic cylinders with check valve for the hydraulic tilting of the furnace.
2. Manually operated hydraulic direction control valve for tilting.
3. Leak detector assembly with stainless steel probe wires and hardware.
4. Set of flexible water-cooled power leads for connection between the power induction coil and power supply unit. Water-cooled leads are with sleeves for protection against metal splash.
5. Furnace is mounted on the pair of self-aligning, pillow block type pivot bearings. Refractory melt-out former is not in our scope of supply as it is easily available in the market and you need this material as consumable.

C. Drawings & Manuals

Equipment layout drawings, wiring and water diagrams, equipment outline, furnace cross sectionsection drawing and an operating and maintenance manual.

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**NECESSARY REQUIREMENTS AT
CUSTOMER'S END**

(CUSTOMER'S SCOPE OF SUPPLY)

Procurement and installations of following equipment and systems is customer's responsibility.

1. Power line up to Furnace Transformer with necessary switchgear.
2. 380 V, 3 Phase/60 Hz power supply to MCC and LT cables from MCC to all the auxiliaries like external Pumps, Cooling tower, internal water pump and hydraulic power unit etc.
3. Cooling water system including RCC/plastic water tanks, piping & fittings as suggested by our Project Engineering Department.
4. Overhead tank for emergency water supply to coil in case of failure of water system.
5. Complete civil work like furnace platform, foundations, overhead tank, underground tank, etc. Supplier will provide necessary foundation layout drawing/load data.
6. Pressurized air supply if required.
7. Overhead crane, pouring ladles/system, pyrometer, charging device, ramming tools and other misc. equipment/tools required to start/run the system.
8. Consumables like hydraulic oil, distilled water, silica paper/board, ramming mass and lining former etc.
9. Statutory requirements of electricity board, factory inspectorate, pollution control and any other statutory requirements.

Why Megacity Engineering?

"Precision is not just a measurement; it is our reputation."

- **Legacy of Reliability:** 30 years in the business ensures a deep understanding of evolving building codes and material sciences.
- **Advanced Technology:** Utilization of automated CNC plasma cutting and robotic welding ensures sub-millimeter accuracy.
- **Quality Assurance:** All fabrication undergoes rigorous non-destructive testing (NDT) and adheres to international ISO standards.
- **Scalability:** A massive 50,000 sq. ft. facility capable of handling multi-thousand-ton monthly outputs.

Conclusion

Megacity Engineering remains a titan in the steel industry. Their transition from a local workshop to a heavy fabrication powerhouse is a testament to their adaptability and commitment to quality. Whether it is a landmark bridge or a complex industrial plant, Megacity provides the skeletal strength that modern civilization relies on.